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HARELIP AND CLEFT PALATE.¹

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INTRODUCTION.

THE genesis of this paper lay in a feeling of dissatisfaction with the results of my earlier efforts in the realms of cleft lip and palate surgery.

Imbued with this spirit of discontent, I made a serious attempt to review the results of a series of 36 operations. With one exception these operations took place during the period from January, 1936, to December, 1938. The exception is an operation on a boy's lip, which was performed prior to the period under consideration; but he is included in

the series because his palate operation was performed in April, 1936. By a critical appreciation of the end results of these surgical procedures I was able to assess the true value of alterations in technique which were made from time to time. A follow-up such as this is rendered difficult in Queensland on account of the scattered population and large area of the State. Parents, however, made every effort possible to present the children for reexamination when requested.

A great deal of this paper deals with aspects of the problem that have already been exhaustively considered by recognized authorities on the subject. These aspects are, however, necessary for a proper understanding and appreciation of the condition and no excuse is made on this account. Again, the writings of others have been extensively studied and many of their ideas incorporated in the methods of treatment which I have now adopted. Certain points in treatment, however, have been developed as a result of my own operative experience, and

¹ A thesis submitted to the University of Queensland for the degree of Master of Surgery. Read at a meeting of the Queensland Branch of the British Medical Association on November 3, 1939.

every effort has been made to elaborate a technique which will tend to eliminate the shortcomings of earlier operations.

No attempt is made to deal with the treatment of the late deformities which may result from ill-advised attempts at repair in childhood, as I have not had sufficient experience in this surgical field.

The immediate object, then, is not to consider the merits and demerits of the innumerable methods of operative treatment which have been advocated from time to time. This would lead the reader into an inevitable morass of conflicting ideas, from which he would emerge totally ignorant of how to attempt, systematically, the treatment of a specific case.

Bearing this fact in mind, and at the risk of appearing dogmatic and categorical on certain points, I have written the paper with the following definite objects:

1. To describe the embryological development of the face and mouth with special reference to congenital lip and palate clefts.
2. To classify, on an embryological basis, the common types of deformity which occur.
3. To present a method of treatment founded on practical experience and applicable to any given case.
4. To describe the several operative techniques in such a manner that they can be intelligently appreciated and understood by the reader. With this end in view, operations are described with special reference to diagrams drawn by the artist, after he had actually seen the operations in progress.
5. To stress the necessity of team work if satisfactory results are to be achieved.
6. To emphasize the urgent need for the establishment of a cleft palate speech-training clinic in Queensland.

In addition, I am presenting a model in support of my ideas on the rationale of cleft palate surgery as here described.

Finally, accompanying this paper, there is a gramophone record made for the purpose of demonstrating the well-known stigmata of cleft palate speech and the dramatic improvement that can be effected by appropriate treatment.

HISTORICAL REVIEW.

The history of the development of cleft lip and palate surgery makes fascinating reading. As far as can be ascertained the deformity was not mentioned in the works of Hippocrates. Galen, however, wrote of cleft lips, calling them *colobomata*.⁽⁵⁾

Although there are records of operative closure of cleft palates being attempted on the continent in the eighteenth century, a Frenchman, Roux, and a German, von Graefe, were undoubtedly the founders of cleft lip and palate surgery in the early part of the nineteenth century; indeed, von Graefe, who was professor of surgery at the University of Berlin, may be considered the founder of modern plastic surgery. An attempt at operative closure was made in England in 1821 and in America in 1827.⁽⁸⁾

Johann Friedrich Dieffenbach was the next actor of importance on the historical stage.^{(8) (12)} He succeeded von Graefe as professor of surgery at Berlin and his diverse writings show that he had a marked leaning towards plastic surgery; he it was who, in 1826, first recommended separation of the mucosa from the periosteum of the hard palate; several years later he advocated the employment of lateral relief incisions in order to remove tension on the suture line.

Robert Liston now claims our attention; he was a famous Edinburgh graduate, well known as one of the foremost anatomists and plastic surgeons of his day. In 1846, one year before his death, he realized the importance of the antagonistic action exerted by the *tensor palati* muscles when suture of a soft palate cleft was attempted; he therefore pointed out the necessity of dividing the tendons of these muscles; he did not, however, think of conserving the muscles and altering the direction of pull of their tendons by fracturing the hamular processes.

The credit for this improvement in technique belongs to Theodor Billroth, who was at one stage an assistant in the clinic of the famous von Langenbeck.^{(26) (12)}

It must be remembered that ether was first used as an anæsthetic in 1846 and chloroform was not accepted until 1847. All surgery before this period must, of necessity, have been primarily a test of the surgeon's speed, delicate and elaborate technique being impossible in the existing circumstances.

In a recent article appeared an interesting reference to a cleft palate operation performed by Pugh, of Launceston, in 1849. Pugh is also credited with being one of the first, if not the first, Australian surgeon to operate with the patient under ether anæsthesia.⁽¹⁹⁾

Bernhard von Langenbeck, who was without doubt the greatest surgeon and surgical teacher of his day in Germany, was responsible for a great advance in technique in 1861, when he stressed the possibility and advantage of stripping the oral muco-periosteum (as distinct from the mucosa alone) from a large area of the hard palate.^{(8) (12)} Possibly he received inspiration from the work of Ollier, a famous French surgeon who, just prior to this period, had done original experimental work on the periosteal covering of bones. Von Langenbeck employed refrigeration anæsthesia by applying ice to the palate region.

The name of Brophy is closely associated with cleft palate surgery during the last two decades of the nineteenth century. An admirably worded criticism of his methods was made by Blair and Brown⁽²⁾ in 1930, and his operation, with its forcible approximation of the maxillæ during the early weeks of life, certainly finds no favour in this country.

D'Arcy Power,⁽²⁰⁾ while pointing out that anatomy still forms the basis of operative surgery, stresses the importance of physiological considera-

tions. During the last thirty years the physiology of speech has been carefully studied and its importance realized in connexion with cleft palate surgery. The ability completely to close the palatopharyngeal isthmus during the pronunciation of certain sounds has been demonstrated as a *sine qua non* of normal speech.

In this century, the names of Gillies, Fry, Veau, Dorrance, Wardill and Browne are closely associated with improvements in operative technique directed towards the restoration of normal speech function.

For many years, more or less standard methods have been accepted for dealing with the various types of harelip. To Vilray Blair, within recent years, belongs the credit of stressing the importance of the persistent nasal deformities remaining after lip repair and of adopting a systematized technique in an endeavour to overcome them.

EMBRYOLOGY.

The face develops on the ventral surface of the cephalic end of the embryo, between the fifth and eighth weeks of intrauterine life, during which stage the embryo grows in length from 5 millimetres to 25 millimetres.⁽¹⁾ Five processes make their appearance: the fronto-nasal process, two maxillary processes and two mandibular processes.

The fronto-nasal process occupies a median position, and on each side, below, a maxillary and a mandibular process develop from the first branchial arch; as these five processes bulge forward they surround a depression, the stomodeum.

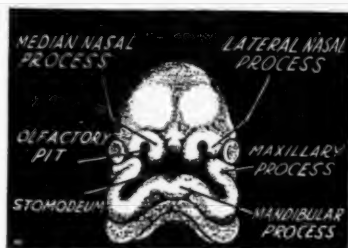


FIGURE I.

The oral (bucco-pharyngeal) membrane in the floor of this depression separates the stomodeum from the blind end of the foregut; at the fifth week of intrauterine life this membrane breaks down, and the stomodeum or primitive mouth becomes continuous with the foregut or primitive pharynx. At the sixth week, an olfactory pit appears on each side of the mid-line at the lower end of the fronto-nasal process. These pits divide the lower end of the fronto-nasal process into a median nasal process and lateral nasal process on each side. The olfactory pits deepen, and at the seventh week the floor of each pit ruptures into the stomodeum. The two openings thus formed are called the primitive choanae, and at this stage communicate directly with the primitive mouth cavity, simulating the permanent condition in amphibia.

The two mandibular processes quickly fuse in the mid-line to form the lower jaw and lower lip.

From the fused median nasal processes are developed the central part of the upper lip—known as the prelabium and including the philtrum—the columella of the nose and the central part of the alveolar process of the upper jaw; this part of the upper jaw is known as the premaxilla. The premaxilla and superimposed soft parts are best spoken of, collectively, as “the central mass”.

On each side the maxillary process develops rapidly into the lateral part of the alveolar process, the cheek and the lateral part of the upper lip. As the maxillary processes grow forward and medially, they fuse first with the lateral nasal processes; after this fusion has taken place, the maxillary processes extend still further medially below the olfactory pits; at the seventh week they fuse with the median nasal processes and in so doing form the floor of the primitive choanae. This fusion also completes the formation of the upper lip and the alveolar border



FIGURE II.

of the maxilla. Exactly how much of the alveolar process, the upper lip and its vermillion border, is developed from the central mass, is open to some doubt. Frazer⁽¹¹⁾ affirms that the maxillary processes grow medially, covering the central mass, and form almost all the upper lip and alveolar process. Dennis Browne⁽⁴⁾ believes that the vermillion border of the upper lip is developed entirely from the maxillary processes on each side. Although I profess to no special knowledge of embryology, careful examination of the central mass, as seen in certain bilateral clefts, makes it hard for me to adopt these somewhat radical departures from the classical embryological conceptions.

It must be clearly understood that the lateral nasal process takes no part in the formation of the upper lip.

One can now go on to consider the development of the palate.

From each maxillary process a lateral palatine process commences to grow towards the mid-line into the primitive mouth cavity. At first these processes are directed downwards and inwards, but, as the tongue is withdrawn from between them, they assume a horizontal plane and fuse at the tenth week, to form the hard and soft palate. This fusion does not extend anteriorly beyond the position of the incisive foramen. The posterior part

of the premaxilla grows backwards, as an inverted V, to this point, to fuse with the antero-medial edges of the lateral palatine processes; these edges diverge obliquely as they pass forward to merge into the antero-medial angles of the alveolar borders of the maxillary processes. An understanding of the mode of palate formation is essential if the embryological background of the various palatal clefts is to be understood.

With the completion of the palate, the nasal and oral cavities become completely separated from each other. At this stage the nose and the nasal septum have already developed from the fronto-nasal process. The lower edge of the nasal septum, fusing with the upper surface of the palate, separates the nasal cavity into right and left halves.

CLASSIFICATION.

One is now in a position to analyse the various types of lip and palate cleft commonly encountered.

Harelip is a failure of union between the soft parts of the central mass and the soft parts of the maxillary process and is known as a prealveolar cleft. It is obvious that this deformity, when present, must be to one or other side of the mid-line. If it occurs on one side only it is unilateral harelip; if on both sides, it is bilateral harelip. When this failure of union is partial, it is called incomplete harelip. When the soft parts of the central mass and maxilla fail to unite at all it is called complete harelip, and in these cases the cleft involves the floor of the nostril. Cleft palate is failure of union between the two lateral palatine processes behind the incisive foramen, or between the premaxilla and one, or other, or both maxillary processes in front of the incisive foramen. The former is best designated post-alveolar cleft, and obviously occurs in the mid-line. The latter is termed alveolar cleft; in this case the line of failure of union passes from the mid-line at the incisive foramen, obliquely, laterally and forwards, through the alveolar border; if harelip is also present, the cleft in the alveolar border lies in close relation to the lip cleft.

Post-alveolar cleft may involve the uvula only, the uvula and soft palate, or uvula, soft palate and hard palate. One never sees a hard palate cleft with an intact soft palate, unless, of course, it is the result of previous operative interference, or of hard-palate disease. Post-alveolar cleft and alveolar cleft often exist together and are generally associated with harelip. Post-alveolar cleft, with an alveolar cleft on one side and harelip on the same side, is known as complete unilateral lip-palate cleft. Post-alveolar cleft, with an alveolar cleft on both sides and harelip on both sides, is known as complete bilateral lip-palate cleft. In post-alveolar cleft, the vomer may hang free between the borders of the cleft, or may be attached to the medial edge of one or other side of the cleft. Any classification beyond this only leads to confusion, although various modifications of the types described may be met with.

Other rare developmental deformities of the face such as *coloboma faciale*, microstoma, macrostoma and median lip cleft do not come within the scope of this paper.

ÆTIOLOGY.

As far back as 1690 Pierre Regis advanced the claims of heredity as a predisposing cause.⁽⁶⁾ Schröder,⁽²²⁾ after carefully studying the ancestral trees in a series of 28 cases, found a preexisting malformation in 46%. Davis⁽⁷⁾ in a larger series found an hereditary taint in 54% of cases.

There is evidence to show that the predisposition is conveyed through the female line. The defect, however, does not seem to be often transmitted directly from the parent to the child. I have yet to see a case in which either parent of an affected child suffered from a cleft lip or palate.

Intermarriage seems to be an ætiological factor of importance, as is in other congenital deformities.

Black races seem less prone to the deformity than whites, and Jews are less affected than other white races.

Hertwig, in 1892, put forward the view that the defects are caused by uterine diseases in the mother;⁽¹⁰⁾ as a result of this, toxins are produced in the amniotic fluid which act directly on the developing fœtus. He expounded this idea after producing developmental defects in tadpoles by treating the ova with saline solution.

Foucar⁽⁹⁾ favours the idea that harelip, and possibly cleft palate also, is caused by the mandible developing before the maxilla and exerting undue upward pressure owing to increased flexion of the head; as a result of this, the maxillary processes are prevented from developing towards the mid-line.

In spite of all the elaborate, and at times ingenious, theories that have been expounded, the mystery of the exact cause of failure of normal embryological development in harelip and cleft palate is still unsolved.

ANATOMY.

A knowledge of certain anatomical points is essential for a proper understanding of the rationale and the detailed operative technique of cleft palate surgery.

Blood Supply of the Palate.

As the arteries are all paired it is only necessary to describe the blood vessels of one side of the palate.

The greater palatine artery is the largest and most important artery of the palate; a branch of the third part of the maxillary artery, it passes down through the pterygo-palatine fossa and greater palatine canal to the under surface of the posterior part of the hard palate; from this point it runs forward medial to the alveolar process to the region of the incisive canal, where it anastomoses with the septal branch of the sphenopalatine artery; this latter vessel, a terminal branch of the maxillary artery, reaches the septum by passing from the pterygo-palatine fossa through the sphenopalatine foramen into the nostril.

Lesser palatine arteries from the maxillary artery emerge through the lesser palatine foramina and supply the soft palate.

The ascending palatine artery, a branch of the facial, enters the soft palate after ascending between the styloglossus and stylopharyngeus muscles.

The ascending pharyngeal artery rises from the medial aspect of the external carotid artery and passes up on the lateral side of the pharynx to the region of the soft palate.

Dorsalis linguae branches of the lingual artery pass backwards in the substance of the tongue and reach the soft palate by way of the anterior tonsillar pillar.⁽⁶⁾

On each side these vessels anastomose freely with each other. It can be seen that the anastomotic supply of the palate as a whole is particularly good and that the soft palate is supplied by at least five different arteries on each side.

These factors will be referred to subsequently during discussion of certain points in the operative technique.

Muscles of the Soft Palate and Upper Part of the Pharynx and their Various Functions in Palato-Pharyngeal Closure.

The palato-pharyngeal isthmus, or naso-pharyngeal isthmus, as it is sometimes called, is the communication between the oro-pharynx and naso-pharynx; ability completely to close this isthmus is essential in the formation of certain consonant sounds. This aspect will be elaborated at a later stage; at the moment it suffices to consider the action of the muscles of the soft palate and certain muscles of the pharynx in relation to this closure (Figure III).

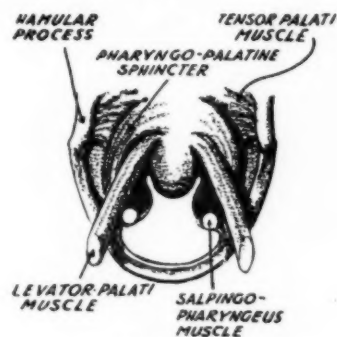


FIGURE III.
Soft palate viewed from above.

It should be remembered that in its normal position at rest the soft palate slopes downward and backward from the hard palate. Immediately behind the soft palate the posterior pharyngeal wall commences to sweep forward towards the roof of the posterior nares.

Consideration of these two facts makes it obvious that any elevation of the soft palate towards the horizontal plane will narrow the antero-posterior interval between the palate and the posterior wall of the pharynx.

If difficulty is experienced in following the description of the muscles concerned, visual examination of the base of a skull while the text is being read will facilitate an understanding of the anatomical factors involved. Careful examination of appropriately dissected specimens is also a great help.

Muscles of the Soft Palate.

Five pairs of muscles go to make up the soft palate; on each side these muscles are: *tensor palati*, *levator palati*, palato-glossus, palato-pharyngeus and *musculus uvulae*.

The *tensor palati* muscle arises from the scaphoid fossa of the sphenoid bone and from the cartilaginous part of the pharyngo-tympanic tube; from its origin the muscle passes downward and forward to a tendon which hooks round the hamular process at the lower end of the medial pterygoid plate; thence the tendon passes medially into the soft palate, forming, with its fellow of the opposite side, the palatine aponeurosis. This aponeurosis is attached in front to the posterior border of the hard palate and, with its oral and nasal mucosa, constitutes the anterior part of the soft palate. It is obvious that when this muscle comes into action it will tense the soft palate from side to side and tend to shorten the antero-posterior length of the soft palate and so oppose palato-pharyngeal closure.

The *levator palati* muscle arises from the quadrate area on the inferior aspect of the petrous portion of the temporal bone and from the cartilaginous portion of the pharyngo-tympanic tube; passing downward and medially, it enters the soft palate to fuse with its fellow of the opposite side behind the palatine aponeurosis.

The *levator palati* muscles, when contracting, lift the soft palate upward and backward and so tend to close the isthmus; if the soft palate is carefully watched during gagging a distinct dimple can often be noticed where the two muscles come together in the mid-line and lift the soft palate up.

The palato-glossus muscle arises in association with its fellow from the antero-inferior surface of the soft palate, and passes downwards, forwards and laterally in the anterior tonsillar pillar to be inserted into the side of the posterior part of the tongue; it is obvious that contraction of this muscle will draw the palate away from the post-pharyngeal wall.

The palato-pharyngeus muscle arises mainly from the palatine aponeurosis, and passes downwards and laterally in the posterior tonsillar pillar to the lateral wall of the pharynx, where it blends with the salpingo-pharyngeus muscle and is inserted ultimately into the posterior border of the thyroid cartilage.

The palato-pharyngeus is relaxed during closure of the palato-pharyngeal isthmus, although the posterior pillar on each side moves freely; a suggested cause of this movement is considered later.

The muscles of the uvula are relatively unimportant in the closure of the isthmus and need no further consideration.

The Superior Constrictor of the Pharynx.

The superior constrictor muscle arises from the medial pterygoid plate, the pterygo-mandibular ligament and the mylohyoid line of the mandible on each side and is inserted into the pharyngeal tubercle of the occipital bone and a median raphe on the posterior wall of the pharynx.

In addition, certain specialized fibres arise from the lateral part of the palatine aponeurosis on each side and sweep round the *levator palati* to blend with the upper fibres of the superior constrictor; these muscle fibres on contraction exert a sphincteric action on the isthmus and play a vital part in its closure. Whillis⁽²⁰⁾ has suggested the name of "palato-pharyngeal sphincter" for this specialized part of the superior constrictor.

I prefer, however, to call it the "pharyngo-palatine sphincter", to avoid confusion with the muscle in the posterior tonsillar pillar, and this nomenclature will be adopted in future reference to the fibres.

When this sphincter contracts, it raises a ridge on the posterior wall of the pharynx at the level of the arch of the atlas known as Passavant's ridge. This ridge was actually shown in illustrations made by Sandifort⁽²¹⁾ in 1805; but Passavant, in 1863, was the first to give a detailed account of the mechanism concerned in its formation.

Two other bands, the salpingo-pharyngei muscles, now claim our attention. These muscles are often described as a part of the palato-pharyngei. I prefer, however, to consider them a specialized part of the superior constrictor, as, in connexion with isthmus closure, they appear to me to subserve an entirely different function to the palato-pharyngei.

They descend vertically from the corresponding pharyngo-tympanic tube on each side, lying in the postero-lateral part of the pharyngeal wall, and, blending with the palato-pharyngei, pass down to the same insertions as these muscles. When contracting, the salpingo-pharyngei help to elevate the pharynx, accentuate Passavant's ridge and facilitate the action of the pharyngo-palatine sphincter. During this contraction they drag the relaxed palato-pharyngei with them, owing to the blending of the muscles in the pharyngeal wall on each side.

Considered from a physiological point of view, all muscle movements involve protagonist, antagonist, and possibly synergistic muscles or muscle groups.

Protagonists contract, and at the same time, obeying the law of reciprocal innervation, antagonists relax, the degree of relaxation varying with the requirements of the individual movement concerned. Synergistic muscles, although not actively involved in the movement itself, play their part, by helping the protagonists to contract to the best advantage.

In closure of the palato-pharyngeal isthmus in speech, then, the *levatores palati* and the pharyngo-

palatine sphincter act as protagonists. The *tensores palati*, the palato-glossi and the palato-pharyngei act as antagonists; the salpingo-pharyngei act as synergists.

This conception will be elaborated later when the rationale of surgical procedures in palate repair is being considered.

The ideas presented here differ in some ways from those generally accepted. I contend, however, that they adequately explain palato-pharyngeal closure, and repeated observation of palate movements in the living and palate dissections on the cadaver have strengthened this conviction; it must be clearly understood that the functions of the various muscles during deglutition and oro-pharyngeal closure do not enter into our calculations in any way.

CLINICAL FEATURES AND TREATMENT.

Having discussed the embryology and essential anatomical features in some detail, we are now in a position to consider the special characteristics and detailed treatment of the various deformities. Before doing this, however, it is advisable to pause for a moment to consider certain features of the normal baby face.

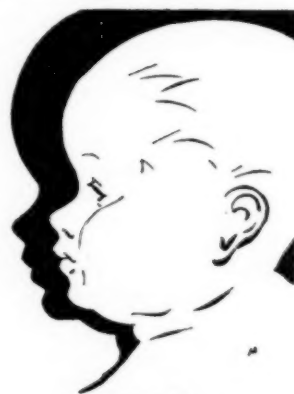


FIGURE IV.

The columella is short, the nose is relatively wide and the nostrils are rounded; the tip of the nose is elevated, the columella passing backwards and downwards to its base; the upper lip is short and tends to be pouting and the naso-labial angle is generally wider than in adults; the most marked feature, however, is the prominence of the normal premaxilla and overlying upper lip; the free edge of the ala on each side turns medially at its attachment to the cheek, just as in adults.

The aim of every surgeon, when operating for harelip, should be to reproduce, as nearly as possible, these characteristic features, which are so frequently admired but so seldom analysed.

Clinical Features of Harelip.

Unilateral Harelip.

In unilateral harelip we have a failure of union between the soft tissues of the premaxilla and the soft tissues of the maxilla on the affected side; the

gap in the lip may be anything from a tiny notch in the vermillion border to a complete lip cleft, involving the floor of the nostril; there may be, and often is, an associated cleft in the alveolus.

In this case the premaxilla, freed from its restraining union with the maxilla and not controlled by an intact lip in front, becomes unduly prominent and tends to rotate on a vertical axis towards the sound side. This results in the free edge of the premaxilla jutting forward, and over this promontory the lip has to be repaired.

In these cases also the columella, particularly at its base, is deflected to the sound side; at the same time the ala, on the affected side, is attached to the maxilla on the lateral side of the gap; this inevitably results in a spreading and flattening of the roof of the affected nostril; associated with this deformity one often finds the lower cartilage of the nose retrodisplaced, dragged back as it were, by the underdeveloped maxilla on the affected side; finally, there is often a peculiar eversion of the lateral part of the ala cartilage, so that its medial surface is clearly visible.

These deformities often exist to a somewhat lesser degree in the absence



FIGURE V.

D.R.—Aged twelve weeks. Complete bilateral lip-palate cleft.



FIGURE VI.
D.R.—Showing the projecting central mass and almost complete absence of columella.

of an alveolar cleft and may even be present to some extent in incomplete lip cleft.

The case for the recognition of the associated nasal defects in severe unilateral harelip has been ably presented by Blair⁽²⁾ and already advocated in this country by Brown⁽⁶⁾ and Stephens.⁽²³⁾

Bilateral Harelip.

Bilateral harelip is almost always, in my experience, part of a complete bilateral lip-palate cleft; it is an unsightly defect, its only possible redeeming feature being its symmetry. The central mass is generally rotated upward on a transverse axis; the columella is often almost rudimentary; the naso-labial angle is lost and the prelabium appears to be a continuation of the bridge of the nose (Figures V and VI). The prelabium itself is often poorly developed, and its vermillion border, although fairly long, is narrow and faintly coloured.

Treatment of Harelip.

General Considerations.

The Time to Operate.—While operation within the first four months of life is definitely advisable, I am

gradually coming to believe that these patients may be precipitated into surgery too soon. Fraser⁽¹⁰⁾ has laid down the dictum that the child should be approaching ten pounds in weight and gaining weight at the time of operation; this is an excellent rule, and I feel that some of my series were not allowed to wait quite long enough.

One writer⁽²³⁾ with a large series of cases now rarely operates on a baby under two months of age. I have heard it said that operation should be hastened if the baby is losing weight; this is a fallacious argument, as the baby immediately after the operation will certainly lose weight more rapidly for a time, and a crisis may be precipitated. Any sign of inflammation in the respiratory tract, or any diarrhoea, is a distinct contraindication to operation, and a preliminary blood count is always advisable.

Feeding Prior to Operation.—An attempt should be made to keep the baby naturally fed; failing this, feeding from a bottle with a large soft teat may be tried; if this is not successful he must be fed with a spoon, pipette, or catheter and funnel; even if the baby is able to suck the breast, he should be taught to drink from a pipette for several days before going to the operating theatre, as feeding must be done in this way for some time after operation.

Pre-Operative Treatment.—No food is given for four hours prior to operation, but the patient is allowed small drinks of water to within one hour of going to the operating theatre, and six ounces of saline solution are given subcutaneously at this time. In our climate every care should be taken to prevent dehydration.

The face is cleansed gently with soap and water and the area round the lips is swabbed with spirit. The preanæsthetic injection is one three-hundredth of a grain of atropine.

Anæsthetic.—"Open" ether is used for induction of anæsthesia and ether given intrapharyngeally is subsequently used. Care should be taken to see that the anæsthetic machine is equipped with an adequate mercury safety valve.

Operation.—The methods of operation employed must be as simple as is compatible with efficiency. Young children do not stand prolonged anæsthesia well. I have always felt that any operation on a young baby which takes longer than forty minutes is fraught with considerable risk. Fraser⁽¹⁰⁾ has pointed out very graphically the sudden drop in blood pressure which tends to occur after twenty minutes, and this is significant of the increased risk of prolonged operation.

On this account the deformity should be examined carefully beforehand and a plan of campaign worked out; while a standardized technique should be aimed at, certain minor modifications are often necessary in individual cases.

As an additional safeguard I always impress on the anæsthetist that great depth of anæsthesia is to be avoided at all costs.

Hæmorrhage also must be controlled as far as is reasonably possible, although some loss of blood is

unavoidable; the total amount of blood in an infant is only a small proportion of the amount in an adult, and any degree of hæmorrhage is correspondingly more serious on this account.

Reasonable warmth of the patient must be maintained while he is on the operating table; except in the depth of winter, no difficulty is experienced in this connexion in Queensland.

I like to have a small sandbag under the shoulders and the head thrown well back to minimize the risk of blood entering the larynx.

A stitch is always passed through the tongue with a non-cutting needle in order to maintain an adequate airway.

Ribbon gauze is packed lightly into the oropharynx before any incisions are made; this may be changed during the operation if it becomes saturated with blood.

A sucker used discriminately is helpful and does not hinder the surgeon.

I have abandoned the method of closing the anterior part of a palate cleft at the same time as a lip repair is carried out; this procedure unduly prolongs the operation and is not justified if one is confident of securing good palate closure at a later date.

The Operative Technique in Unilateral Harelip.

The method employed in a complete lip cleft associated with alveolar cleft will be considered first; modifications will then be described which are necessary for dealing with, firstly, incomplete harelip, and secondly, complete harelip associated with gross flattening and deformity of the ala on the affected side.

Wiring of the separated maxilla and premaxilla is eschewed except in the most extreme cases, and is then used only to bring the separated bone edges sufficiently close for the lip to be united in front of them, any backward displacement of the premaxilla being avoided.

In the description of the operative technique, frequent reference will be made to the diagrams which show the progressive stages of the operation.

Step I (Planning the Incisions).—The incisions are carefully planned with the idea of obtaining a vertical naso-labial length on the affected side equal to that on the sound side.

To this end dividers are used to delineate the distances AB and A₁B₁ (Figure VII), care being taken that the distance AB along the muco-cutaneous line equals the distance A₁B₁ along the muco-cutaneous line. The points A, B, A₁ and B₁ having been fixed and pricked with the dividers, they are more permanently marked with a spot of Bonney's blue or methylene blue injected through a fine hypodermic needle; if this is not done they tend to become obscured with blood clot at a critical stage of the operation and valuable time may be wasted.

Step II (Undermining the Soft Tissues).—On each side an incision is made along the gum-cheek margin for a distance depending on the width of the cleft; the cheeks are freed by dissection from the periosteum of the maxilla. The tendency is to be not radical enough in this regard; the cheek may be freed right up to the infraorbital margin and well out beyond the infraorbital foramen; any troublesome bleeding is quickly stopped by means of ribbon gauze packed between the maxilla and the elevated

soft tissues; the ala on each side and the columella are freely separated from their attachments to the subjacent bone.

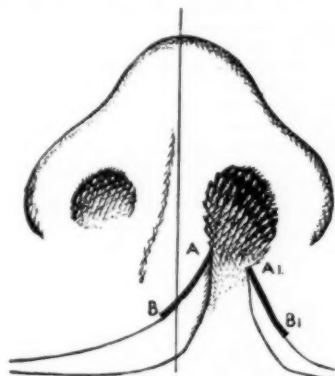


FIGURE VII.

Step III (Lip Incisions).—Lip incisions are made from A to B and from A₁ to B₁ along the muco-cutaneous junction; a specially sharpened narrow-bladed knife is used, the whole thickness of the lip being transfixed and the incision made with the lip under tension; there is a definite tendency not to include enough tissue in the mucosal flap. If these incisions are not deftly made, skin may subsequently be included in the mucosal suture line or mucosa in the skin suture line.

The mucosal flaps thus separated are shown in Figure VIII.

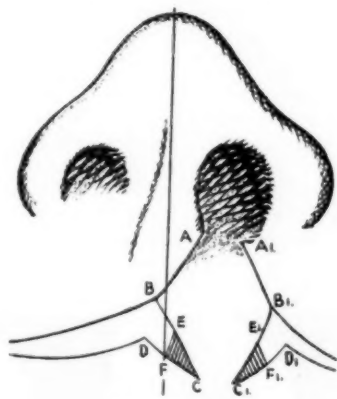


FIGURE VIII.

Step IV (Suturing the Raw Skin Edges).—The object now is to approximate A to A₁ and B to B₁. This is done by two layers of sutures.²⁵

(a) The first is the muco-muscular tension layer. A fine curved cutting needle and number 000 chromicized gut are used. Three or four interrupted vertical mattress sutures are passed, as shown in Figure IX; this requires some judgement, and in the case of the upper two, simple interrupted sutures may be used instead of the vertical mattress ones.

(b) The second is the skin approximating layer. Special fine silk sutures with non-traumatic curved needles are utilized for the skin-approximating layer; they are known as "Merson's Mersutures—black braided silk No. 1, with improved eyeless needle attachment". Three or four simple interrupted sutures are used to approximate carefully the skin edges; the lowest one is inserted first; it approximates the muco-cutaneous junction on each side and great care is needed at this stage. It is advisable to pass a further suture at the upper end of the incision to complete adequately the floor of the nostril; as any suture holes here will not show subsequently, silkworm gut is

used in this case, and a vertical mattress suture is employed to avoid a subsequent "V" in the floor of the vestibule.

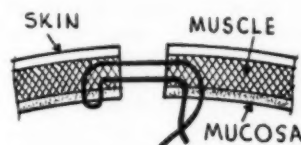


FIGURE IX.

Step V (Suturing the Raw Mucosal Surfaces).—The mucosal tags BCD and B₁C₁D₁ (Figure VIII) are still hanging free; in most cases, if they are united as they exist at this stage the resultant "tag" or "hillock" is too pronounced, and acute angles are formed at the points D and D₁ (Figure X). To overcome this, a triangular area of appropriate size and shape is excised from each flap; these areas are shown in Figure VIII as CEF and C₁E₁F₁.

The raw mucosal surfaces are now brought gently together with two fine silk sutures. The completed suture line is now as shown in Figure X, A being opposed to A₁ and B to B₁, *et cetera*. The small hillock left on the mucosal surface is to obviate a subsequent inverted "V" depression on the vermillion border of the lip.

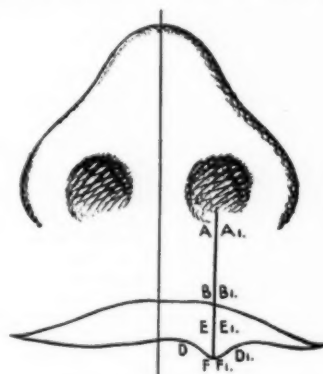


FIGURE X.

This brings us to consideration of incomplete harelip; the same technique is followed in these

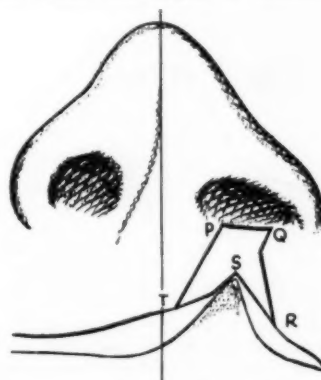


FIGURE XI.

cases unless marked flattening and widening of the nostril on the affected side are present (Figure XI); if this has occurred, an area of tissue below

the nostril PQRST is excised by means of the incisions shown in the diagram. The exact shape and size of this area depend on the type and degree of deformity present; from this stage onward the operation is continued along the orthodox lines described above.

There now remains to be considered the type of case in which there are a wide gap and extreme flattening of the nostril, and the ala at the alabial junction is directed laterally instead of medially (Figure XII).

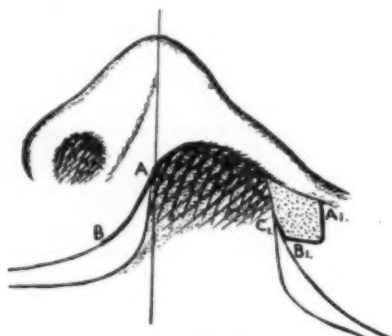


FIGURE XII.

It is in this type of deformity that the methods of Blair⁽²⁾ seem more applicable than any others which I have seen advocated, and the following technique is modelled largely on some of the ideas which he has presented.

The line AB on the medial side is marked out as before; the line A₁B₁ is mapped out as shown (Figure XII); from B₁ it is continued along the muco-cutaneous junction to its termination C₁. Care must be taken that the distance along the line AB equals the distance along the line A₁B₁. Extensive undermining of the cheeks is now carried out and the alae and columella are freely separated from their attachments. The incisions AB and A₁B₁C₁ are next made. The flap indicated by the stippled area (Figure XII) is known as the nasal flap; it now tends to retract as shown in Figure XIII. A further incision, XY, made

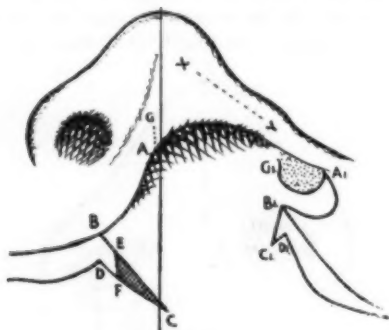


FIGURE XIII.

on the medial side of the ala, allows the lower cartilage and its inner lining wall to be subcutaneously freed from the skin on the lateral side of the ala, and at the same time any excess ala cartilage may be excised; by this means unnatural kinking of the cartilage is overcome; this incision, however, is needed only on occasion. A₁G₁ (Figure XIII) represents the raw surface of the nasal flap. AG is a "rawed" area on the surface of the septum at right angles to the plane shown and not actually visible.

Suturing is now done in the accepted way, A being opposed to A₁ and B to B₁ (Figure XIV). A₁G₁ is opposed to AG, the nasal flap thus helping to form the floor of the nostril. The sutured surface AA₁GG₁ is actually invisible inside the nostril, but is shown thus for simplicity. If necessary, some of the nasal flap may be excised before the suturing is done, but great judgement is required at this stage.

Figure XIII shows that in this case an area of vermillion mucosa—CEF—is excised from one mucosal flap only, the actual amount removed depending on circumstances.

Figure XIV shows the completed suture line and reconstructed nostril.

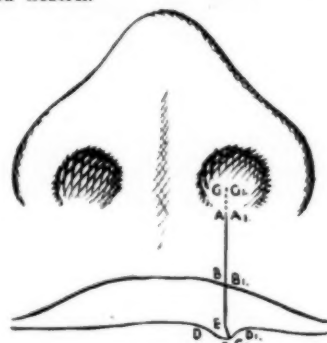


FIGURE XIV.

Operative Technique in Bilateral Harelip.

As previously mentioned, patients with bilateral harelip nearly always have a complete bilateral cleft and are of the "wolf snout" variety.

The operation divides itself into two phases.

Phase I (Replacement of the Central Mass).—It cannot be too strongly emphasized that replacement of the central mass does not mean replacement of the premaxilla to a position between the maxillae; the object is to replace the premaxilla in its normal position in front of the maxillae in order that the lip can be united in front of this again; another object is to restore the columella without depressing the tip of the nose.



FIGURE XV.



FIGURE XVI.

No wiring must be done on any account; it will inevitably lead to ultimate retrognathism if not to actual loss of the premaxilla due to trauma. The procedure adopted is shown in Figures XV and XVI.

An area of bone at the base of the premaxilla—shown shaded in Figure XV—is resected submucously, great care being taken not to encroach on the septum proper; in this way undue depression of the bridge of the nose is avoided. The central mass is now moved back as a sliding door and only very slightly rotated downwards; in this way the columella is reconstituted and the framework for the baby-face profile is retained (Figure XVI).

Phase II (Repair of the Lip).—Whether the lip is prepared at the same operation or some weeks later depends on the time factor and the general condition of the baby. If the operation is done in two stages the central mass during the interim is held in its new position by careful application of strips of "Elastoplast".

Lip flaps must be used in this type of deformity, owing to the poor development of the prelabium. The cheeks are very freely mobilized and the columella and alae are freed from their attachments as before. The incisions ACB and $A_{11}C_1B_1$ (Figure XVII) are made on each side and the shaded tissue is removed by completion of the incisions CD and C_1D_1 . The border of the prelabium is made raw along the line A_1YA_{11} , the poorly developed vermilion border of the prelabium being sacrificed in its entirety.

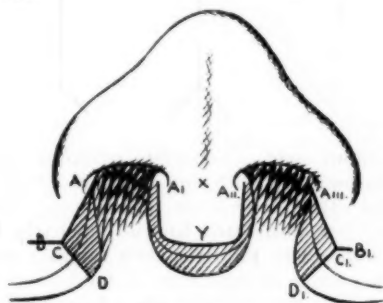


FIGURE XVII.

The actual distance from C and C_1 to the mucocutaneous junction on each side depends on the length XY , the incisions being planned to obtain a reasonable naso-labial distance.

The lip flaps thus formed on each side are brought to the mid-line and the raw edges are approximated as shown in Figure XVIII. Suturing is done in two layers as

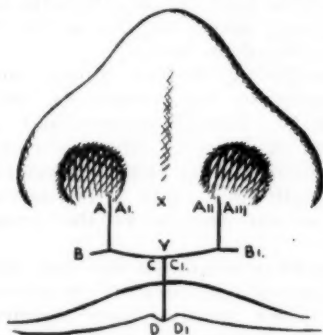


FIGURE XVIII.

before; but no mattress sutures are used in the mucomuscular layer, and care is taken to leave no buried knots. A silkworm gut vertical mattress suture is employed at the upper end of each vertical suture line. Braided silk skin approximation sutures are used as previously described.

My experience is that while this is not an extremely difficult undertaking, the appearance at the completion of the operation is better than it is five days later, when the suture lines tend to break down in one or more places.

In harelip surgery three important points are worthy of mention: (i) Try to approximate all suture lines without tension. (ii) Never tie any skin sutures too tightly; they will cut out easily and leave ugly scars. (iii) Never cut away any tissue until you are sure it is going to be of no value.

Post-Operative Treatment of Bilateral Harelip.

A Logan's bow is always applied before the patient leaves the operating theatre, care being taken that it does not exert pressure on any suture lines. The stitch through the tongue is retained until the child recovers consciousness completely. The arms are splinted carefully. Sips of water are given as soon as possible, and if necessary saline solution is administered rectally or subcutaneously. Feeding with either a pipette or catheter and funnel is reestablished as soon as the effects of the anæsthetic have worn off.

No breast feeding is allowed until the lip has completely healed.

The suture line is left uncovered. If any scab tends to form it is carefully removed by being swabbed with peroxide of hydrogen. The suture line is gently swabbed, first with boracic lotion, secondly with spirit, and finally with acriflavine solution (1 in 1,000) every two hours for the first four days, and subsequently at longer intervals.

Great pains are taken to prevent any mucus from the nostrils from trickling down on to the wound. Colloidal silver drops instilled into the nostrils will tend to lessen the amount of this troublesome mucus.

The skin approximation sutures are removed on the third or fourth day, the silkworm mattress sutures on the eighth day and any loose mucomuscular sutures after the tenth day.

Post-Operative Complications.

Shock.—Shock is always present to some degree, but is seldom serious if the operation has not been unduly prolonged.

Heat Stroke.—In heat stroke we have a very real danger in this country during the summer months, and it actually occurred in one of my cases recently.

This particular operation was commenced at 11 a.m.; at midday the child was returned to the ward in good condition; at 4 p.m. her temperature was 107° F. in the axilla and she looked to be *in extremis*. Ice packs quickly reduced the temperature to within reasonable limits, although she was very distressed for some hours. At 1 p.m. on the day in question the dry bulb thermometer temperature was 86° F. and the humidity was 61%; at 3 p.m. the temperature was 82.5° F. and the relative humidity was 69%.

Bronchopneumonia.—In my experience, bronchopneumonia is a very unusual complication if a

careful pre-operative examination of the respiratory system is made and if the correct position of the head is maintained throughout the operation.

Wound Infection.—Wound infection, a troublesome complication, can be almost completely eliminated with careful post-operative treatment of the wound; in this connexion I am convinced that the placing of any dressing over the suture line is contraindicated. The wounds show a greater tendency to break down in bilateral harelip operations; possibly this is because infection is more difficult to prevent on account of the poor blood supply in the central mass.



FIGURE XIX.

G.M.—Aged six years. Originally a case of complete unilateral lip-palate cleft. Note retrognathism of upper jaw.

Unfavourable Sequela.

Careless suturing will result in an unsightly "step" in the muco-cutaneous junction of the repaired lip; incorrect cutting of the flaps may result in the inclusion of vermillion border in the skin or of skin in the vermillion border of the lip. Suturing, if not properly carried out, may well result in a wide, lumpy or depressed scar, or in an



FIGURE XX.

G.M.—Note improvement in profile with built up denture.

inverted "V" deformity of the lip. Retrognathism must be carefully guarded against, and while some degree of nasal deformity will almost inevitably persist, every care must be taken to reduce it to a minimum.

At times some degree of retrognathism manifests itself as a late result of lip repair; in such a case a simple built up denture will do much to improve the general appearance of the patient (Figures XIX and XX).

Clinical Features of Cleft Palate.

Alveolar cleft and post-alveolar cleft may exist separately or together; the alveolar cleft may be unilateral or bilateral. Either type of cleft palate may exist alone, or be associated with any type of lip cleft.

In the embryological basis of classification it was shown that any cleft palate behind the incisive foramen (post-alveolar cleft) is in the mid-line; any cleft in front of the incisive foramen (alveolar cleft) deviates obliquely to one or other or both sides of the mid-line.

Palate clefts, then, may conform to any of the following patterns or any part of them, with the exception that a cleft involving a portion only of one of these patterns always involves one, or other, or both ends and not the central portion alone.



I have seldom seen a complete alveolar cleft that was not associated with some degree of lip cleft.

Provided that adequate treatment has been undertaken for associated lip cleft in early infancy, patients with cleft palate, when coming to operation at two years of age, have a median cleft only. A mid-line cleft may involve the whole of the palate behind the incisive foramen; on the other hand, the lack of fusion may be so slight as to involve only the tip of the uvula. The width of the gap varies considerably and is not altogether dependent on the length of the gap. The child's speech is characteristic and will be discussed at a later stage.

There is a good deal of variability in the degree of arching of the hard palate; in clefts of the hard palate the vomer may hang free or be attached to one or other side of the cleft.

The primordia of the four upper incisor teeth usually develop in the premaxilla, although on occasion the two lateral incisors may develop in the maxillae; in cases of alveolar cleft there is always a defect in one or more of these tooth germs and occasionally one finds a rudimentary tooth lying free on the surface of the premaxilla or maxilla.

Children who have an alveolar cleft often have a wide hard and soft palate cleft; in these cases the immediate object is to obtain closure of, and mobility of, the soft palate at its normal distance from the posterior pharyngeal wall; as a dental plate will almost certainly be necessary in any case, owing to the defective tooth formation, a small post-operative defect in the hard palate is relatively unimportant.

Quite often these children are somewhat backward both mentally and physically.

Treatment of Cleft Palate. General Considerations.

The Time to Operate.—There is no doubt that operation should be performed before the typical defective speech of this condition has become established; if operation is delayed, the child not only ceases to attempt the correct articulation of certain words, but also develops objectionable substitute movements of his vocal mechanism in his attempts to reproduce consonant sounds; these habits have to be eradicated during subsequent training, and delay improvement in speech. It is, therefore, advisable to operate before two years of age in order to obviate these difficulties.

If, however, operation is attempted much before this, the operative risk is greater and the mucosa is often not sufficiently thick to allow of easy handling; finally, the anastomotic blood supply is not well enough established to give adequate nourishment to the flaps.

Pre-Operative Precautions.—A blood count should always be made, as these children tend to be anæmic; in addition the coagulation time, bleeding time and platelet count should be estimated.

I consider that inoculation for diphtheria is advisable.

I recall with great regret one patient on whom I operated, an apparently robust boy of four years old; about six weeks after a successful palate closure he contracted fulminating faucial diphtheria and died in a few days.

Tonsils, unless small and obviously healthy, should be removed three weeks before operation. Impetiginous sores around the mouth are a direct contraindication to operation. A donor should be readily available in case a blood transfusion is needed at any stage.

Pre-Operative Treatment.—Fluids and glucose are given freely for the twenty-four hours prior to operation; one one-hundred-and-fiftieth grain of atropine is given hypodermically half an hour before the child is sent to the operating theatre.

Anæsthetic.—Ether administered by a catheter passed through the nostril into the pharynx has proved quite satisfactory; as mentioned before, the anæsthetic machine must have a suitable mercury safety valve to obviate the danger of increased intrathoracic pressure.

Operation for Cleft Palate.

The surgical procedure herein described is modelled to some extent on that of Wardill, who was the first to introduce pharyngoplasty⁽²⁷⁾ into the operative technique. As a result of experience modifications have been introduced, which tend to simplify certain stages and lessen the duration of the operation. A long cleft requires both anterior and posterior flaps. A short cleft needs only posterior flaps. The method for dealing with the former is described in detail and the modifications in the incisions necessary for the latter are shown in later diagrams.

The head is held well back with a sandbag under the shoulders; in this position the judicious use of a sucker prevents any blood from reaching the

larynx. The surgeon sits at the patient's head and wears a focusing headlight; a stitch is passed through the tongue to control it during the operation. Care is taken that no instruments are placed on the patient's chest.

The use of the following special instruments is advisable:

- Lane's cleft palate mouth gag.
- Eiselberg's needle holder.
- Lane's needle holder.
- Long fine-toothed dissecting forceps.
- Berry's cleft palate hooks.
- A series of dissectors with varying angles.
- Dennis Brown's eleven-sixteenth circle needles.

Special care must be taken throughout the operation to see that sutures are not tied too tightly and that no edges are brought together under tension. The operation is carried out in one stage unless there is some special contraindication, and I always aspire to have it completed within the hour.

Step I (Commencement of Pharyngoplasty).—The patient is allowed to gag in order to show up the salpingopharyngeal bundles on each side. A transverse incision is made at the level of the arch of the atlas; this incision extends laterally on each side as far as the salpingopharyngeal fibres; care must be taken not to make this incision too deep, as otherwise the retropharyngeal space behind the bucco-pharyngeal fascia will be opened up and

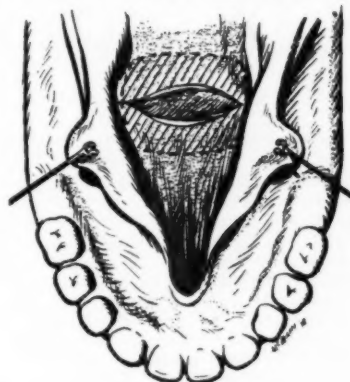


FIGURE XXI.

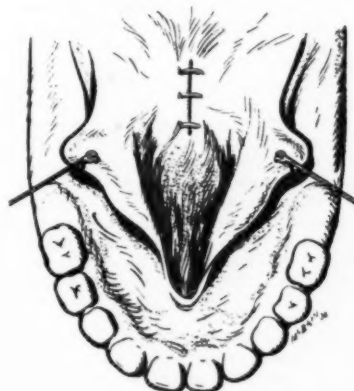


FIGURE XXII.

the risk of spreading infection increased. The muscle is now dissected up from the bucco-pharyngeal fascia by undermining of the incision on all sides (Figure XXI).

Three interrupted number 0 chromicized gut sutures are now passed from side to side; an Eiselberg needle-holder and a half curved needle are used, the important point being to obtain a good bite of the salpingo-pharyngeal folds, which in this situation are only loosely attached to the fascia behind them; the introduction of these sutures requires some skill and practice owing to the depth and narrowness of the operative field. At this stage the sutures are not tied, but are left long and clipped with light artery forceps.

Step II (The Relief Incisions are Made on Each Side).—The relief incisions are made quite close to the line of the teeth and must not be carried too far forward, so that a wide base will be left for the anterior flaps; posteriorly they pass beyond the hamular processes and may even extend on to the tonsillar fossæ (Figure XXIII).

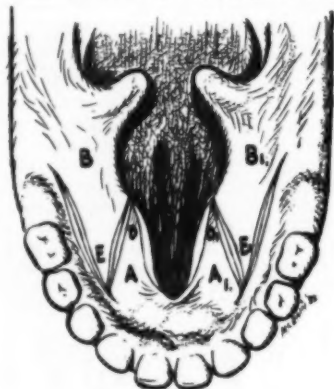


FIGURE XXIII.

Step III (Fracture of the Hamular Processes).—The hamular processes are fractured in the following manner. A strong curved dissector is passed to the lateral side of the process and controlled pressure is exerted towards the mid-line, care being taken that the dissector is held on the process with the free hand; sometimes a considerable degree of force is necessary; the tendency of the two halves of the soft palate to fall together after fracture of the processes is often remarkable.

Step IV (Separation of Muco-Periosteum from Hard Palate).—The muco-periosteum is now freely separated from the underlying bone of the hard palate, and along the whole length of the medial edge of the hard palate on each side a dissector is forced through the mucosa to separate the oral from the nasal mucous membrane.

Step V (Formation of Flaps).—Oblique incisions (Figure XXIII) are now made from D and D₁ to E and E₁, respectively, delineating anterior flaps A and A₁ and posterior flaps B and B₁.

Step VI (Division of Palate Aponeurosis).—The posterior flaps are elevated from the bone until the posterior border of the hard palate is exposed; the attachment of the palate aponeurosis is now cut through in its entirety, the soft palate being left attached to the hard palate by the nasal mucosa only; at this stage it can be seen whether the greater palatine artery is going to prevent free medial displacement of the flap on either side; if necessary one or both arteries may be tied and cut with impunity. If the posterior flaps are still not sufficiently mobilized they may be freed still further by blunt dissection in the region of the fractured hamular processes.

Step VII (Separation of Nasal Mucosa).—The nasal mucosa is now easily separated with a special curved dissector passed round the edge of the hard palate.

Step VIII (Completion of Pharyngoplasty).—The sutures previously clipped with forceps and left long are now tied and the so-called pharyngoplasty is now completed (Figure XXII).

Step IX (Preparation of Edges of Soft Palate).—The edges of the soft palate are prepared by excision of a

strip of mucosa along each medial edge, a sharp narrow-bladed scalpel being used and the edges held tense while the cutting is being done; special care must be taken to see that sufficient mucosa is removed to leave a good raw surface along the whole length of the soft palate and uvula on each side.

A small nick with a knife in the free edge of the nasal mucosa on each side, just where it passes from the hard to the soft palate, is now made; this facilitates retro-displacement of the soft palate.

Step X (Suture of Nasal Mucosa).—An attempt is now made to bring the nasal mucosa—previously elevated from the hard palate on each side—together with interrupted fine chromicized sutures; often I find this impossible along the whole length of the hard palate, but it should always be attempted; several of the sutures so passed are left long on each side (Figure XXIV).

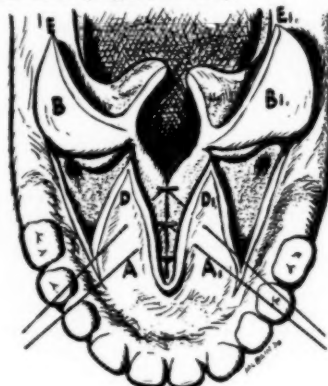


FIGURE XXIV.

Step XI (Suture of Anterior Flaps).—The anterior flaps are brought together in the mid-line with interrupted dermal sutures, some of which are passed as vertical mattress sutures to make sure that the raw edges are approximated. These flaps are held up on to the nasal mucosa by means of the sutures left long in Step X.

Step XII (Suture of Uvula, Soft Palate and Posterior Flaps).—The suture of the uvula, soft palate and posterior flaps, commencing from the uvula, is done with interrupted dermal stitches, some of which may again be

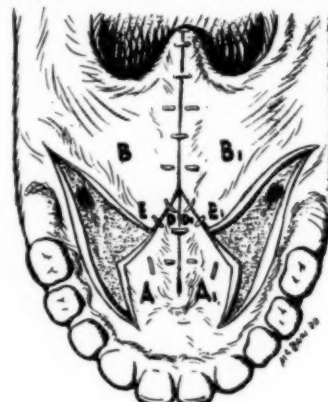


FIGURE XXV.

passed as vertical mattress sutures; it will be noticed that no attempt is made to suture the two mucosal layers of the soft palate separately; this is, in my opinion, unnecessary and increases the time of the operation. Any approximation akin to the *suture musculaire* of Veau⁶⁰ is strictly avoided. The method of uniting the flaps is shown in Figure XXV. In this figure the marked "push-

back" of the soft palate and also the exposed bone of the hard palate are clearly demonstrated.

When the cleft to be repaired is a short one involving the soft palate only, no anterior flaps are required. The incisions in this type of case are indicated in Figure XXVI; the method of suturing the retroposed posterior flaps as well seen in Figure XXVII.

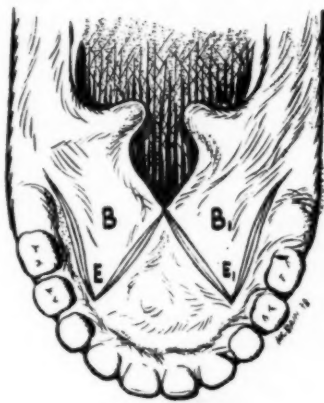


FIGURE XXVI.

Rationale of Operation.

The objects one sets out to achieve are, firstly, the firm union of the two halves of the split palate and, secondly, the formation of a palato-pharyngeal isthmus that will allow of complete closure during speech, a necessary feature of the operation first given due prominence by two writers in 1921.⁽¹³⁾

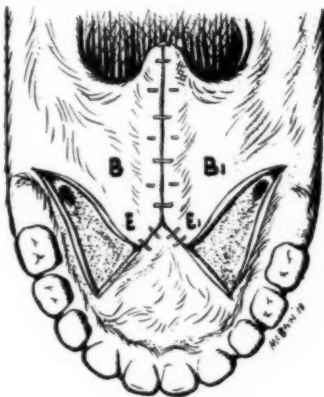


FIGURE XXVII.

It has been stressed by Wardill and Whillis⁽²⁸⁾ that the actual measurements of a normal nasopharynx at rest show the transverse diameter to be two centimetres and the antero-posterior diameter to be one centimetre; this means that the normal diameters are considerably smaller than those usually seen in adult cleft palate cases; it is reasonable to assume that this increase in diameters has persisted since birth, and so is emphasized one of the less obvious problems of cleft palate surgery.

In addition the *tensor palati* tendons in cleft palate are always obviously shortened, as can be seen when the sound "ah" is made with the mouth wide open; the posterior segments of the palate are

seen to move towards each other, but the anterior segments remain fixed, owing to the shortened tensor tendons.

Analysis of Certain Phases of the Operation.

We are now in a position to analyse certain phases of the operation.

Relief Incisions.—The relief incisions are close to the alveolar border and lateral to the greater palatine arteries as they pass forward to their anastomoses with the terminations of the sphenopalatine arteries. As a result of this the best possible blood supply is obtained for any flaps which are made.

Fracture of Hamular Processes.—Fracture of the hamular processes alters the horizontal and lateral pull of the *tensor palati* muscles to an upward and slightly backward pull and at the same time removes the tension effect which these muscles would otherwise exert on the suture line of the soft palate; it is quite conceivable that this manœuvre actually converts the antagonistic tensors into synergists if not actually protagonists.

Separation of Muco-Periosteum from the Hard Palate.—No harm is done by separation of the muco-periosteum from the hard palate, as the blood supplies of the bone and its mucosa are derived from different sources.

Flap Formation.—The fact that the four flaps are all reasonably short and have a wide base obviates the risk of any sloughing; in addition, the blood supply of the soft palate is so profuse that the greater palatine arteries can, if necessary, be cut as they emerge from the foramina, without danger to the nourishment of the posterior flaps.

Separation of the Palatine Aponeurosis.—Separation of the palatine aponeurosis from the hard palate, a vital step, allows the soft palate to be retroposed without interference with the action of any of the muscles in isthmus closure.

Suture of the Nasal Mucous Membrane.—Suture of the nasal mucous membrane eliminates a large raw area in the nose, one of the weaknesses of the old Langenbeck operation.

Suture of the Flaps.—The method of approximating the raw edges of the posterior flaps is one of the main features of the operation. Careful study of Figures XXIII and XXV will show the way in which the "push-back" of the soft palate has occurred; this procedure materially narrows the antero-posterior diameter of the isthmus.

The Approximation of Oral and Nasal Mucosa.—By the approximation of the oral to the nasal mucosa the hard palate mucosa is kept at its normal level and the soft palate is prevented from sinking below its optimum position; failure to achieve this object was another of the drawbacks of the original operation of von Langenbeck.

Pharyngoplasty.—One of the chief values of pharyngoplasty is that it undoubtedly narrows the palato-pharyngeal isthmus during the healing stage.

Indeed, Wardill⁽²⁶⁾ states that observation of many cases over a period of years shows that this narrowing persists. In this way it allows the reconstruction of an isthmus which is reasonably small in all its diameters and so aids the ultimate efforts of the protagonist muscles. In addition, it alters the direction of the pull of the fibres of the salpingo-pharyngei. These muscles, acting now from the mid-line at the level of Passavant's ridge, actually pull the pharyngeal wall upwards and towards the mid-line. The salpingo-pharyngei have been converted from synergists to protagonists.

Experience has shown that pharyngoplasty does not cause any interference with hearing, nor is there any increased risk of middle ear infection by way of the Eustachian tubes.

If the foregoing is carefully considered, it will be seen that, while any steps in the operation involving the protagonists and synergists have enhanced their activity, the only interference with the antagonists has resulted in an increased relaxation of the *tensor tympani* muscles.

The principle of obtaining palate union with simultaneous narrowing of the palato-pharyngeal isthmus is practised by Dennis Browne⁽⁵⁾ with a different technique; he has introduced a somewhat novel procedure in which he passes a purse-string suture round the pharynx; his published results are striking, and I understand that his methods are being practised with considerable success in other parts of Australia.

Post-Operative Treatment.

The arms are splinted on the patient's return to the ward.

Water and 10% glucose solution are the only fluids administered for the first forty-eight hours; subsequently, fluids only are given for fourteen days at least.

Draughts of bromide and chloral hydrate are exhibited if there is marked distress.

Gentle spraying of the suture line after drinks is of some advantage.

I remove the dermal sutures about the twelfth day, generally under an anaesthetic.

Post-Operative Complications.

Shock is not likely to be pronounced unless there has been excessive blood loss, or unless the operation has been unduly prolonged.

Hæmorrhage should always be watched for; it may occur as a slow ooze or a sudden secondary hæmorrhage; it is, however, a cause for alarm on rare occasions only.

Bronchopneumonia is very unusual if adequate care has been taken during the operation to prevent entry of blood into the larynx.

A gap often appears at the junction of the hard and soft palates towards the end of the second week; this gap, called by Veau *trou temporaire*, often closes with remarkable rapidity, and in five weeks after the operation may have completely disappeared.

CLEFT PALATE SPEECH AND POST-OPERATIVE REEDUCATION.

Normal speech occurs as a result of coordinated muscular movements of the abdominal wall, thorax and upper air passages.

Regulated expiratory effort results from thoracic or abdominal wall muscle action; air is forced past the vocal cords; beyond the cords the air passes into a chamber, the shape of which can be altered in many ways by movements of the soft palate, tongue, lips and cheeks.

The alterations of shape so produced are responsible for the vowel and consonant sounds of normal speech.

In many consonant sounds the mouth is completely shut off from the nose by the hard palate and by the soft palate, aided by the pharyngeal wall;⁽¹⁸⁾ the current of air consequently passes directly out of the mouth; consonants formed in this way are the voiced explosives B, D and G, the unvoiced explosives hard C, P and T, the voiced fricatives TH and Z, the unvoiced fricatives F and S and the voiced consonant L.

Investigation of the actual mechanism concerned in this occlusion of the nasal cavity has been handicapped by the fact that it has been impossible to see the muscle movements except through the mouth; from this aspect certain of the vital muscles are hidden from view.

In recent years a number of observations of palate movement have been made on patients who have suffered gross destruction of the face or orbit.

I recently had the opportunity of seeing a very interesting cinematograph film which showed the movements of the soft palate from above. This film was prepared in the departments of anatomy and physiology of the medical school of the University of Queensland. The subject was a man who had suffered removal of a tumour of his left orbit, his phonation remaining normal. Through the resulting cavity the movements of the soft palate could be clearly seen. Loudness of phonation was without effect on the degree of movement of the palate; the height to which the soft palate rose was noted in reference to the pronunciation of certain words.

It was definitely shown, by direct observation, that the elevation of the soft palate was much more marked with the pronunciation of the explosive T than with the nasal resonant M.^{(15) (17)}

This direct finding is in accord with the ideas based on more indirect evidence, and goes to prove the large part played by the levator muscles in isthmus closure.

If a cleft palate is present, the oral and nasal cavities are in constant communication and the consonants enumerated above cannot be properly pronounced.

Consider the disadvantages under which a child with cleft palate is placed. As he makes his first pathetic efforts at speech he finds that he cannot reproduce the consonant sounds that he is attempting; he tries again and again and still he fails. He

gradually becomes conscious of the fact that the normal process of imitation is failing to produce the desired result; the inevitable tendency is for him to discontinue his efforts at reproduction; carried to its extreme limit this type of speech develops into an unintelligible sequence of vowel sounds; expressed in a different way, it means that the child completely fails to develop the lip and tongue movements normally used in the articulation of the consonants under discussion.

Some children in their efforts to produce the desired sounds introduce substitute movements of their vocal mechanism, such as attempted closure of the *alae nasi* and the phenomenon known as glottic stop; in this acquired habit the current of expired air is blocked at the larynx and then suddenly released.

If a cleft palate is completely repaired in such a way that the patient still cannot shut off his nasal from his oral cavity, it is easily seen that the major part of his speech disability will persist, in spite of all efforts.

Patients, however, who have had an operation done which allows them completely to close the palato-pharyngeal isthmus, are equipped with a normal mechanism and are in a position to learn the correct pronunciation of their consonants.

Several simple methods are available to test the efficiency of the sphincter between the mouth and nose. Ability to blow up a rubber balloon and non-clouding of a mirror under the nose, on saying the word "puppy", are tests which indicate the power to close the isthmus. If a rubber tube is connected at one end to the patient's nose and at the other end to the ear of the examiner and the patient is instructed to say any of the explosive consonants, escape of air into the nose will be clearly heard by the examiner.⁽¹⁵⁾

From what has been said it is obvious that speech training should commence actually before operation; the child should be gently encouraged to persevere with normal lip and tongue movements, and the development of any faulty speech habits should be carefully prevented.

After operation, any substitute movements must first be eradicated before constructive lessons are begun.

Then the simplest explosive sounds are taught and the correct movements of the palate, lips and tongue are gradually elaborated.

Often one quickly realizes that the child finds it extremely difficult to pronounce a particular consonant. Ingenious exercises have been elaborated to deal with this problem;⁽²⁰⁾ for instance, to produce the sound "s" the patient is taught to say "th" with the tip of the tongue between the teeth; continuing the sound, the tongue is slowly withdrawn, pressing on the upper teeth, until the tongue passes on to the palate just behind the teeth.

Exercises should be given for short periods several times each day,⁽²⁰⁾ great pains being taken to secure the interest and cooperation of the small pupil.

The teacher should exaggerate every movement of his lips and tongue and employ a mirror in which the patient may look to see if he is copying the movements correctly.

An important point, and one that is easily forgotten, is that all those with whom the patient comes in contact should be always on their guard to sound their consonants correctly in ordinary conversation.

The rapidity and completeness of the recovery of speech function which will take place after operation are difficult to assess. The anatomical efficiency of the sphincter, the degree to which the art of speech has been lost prior to operation, the necessary eradication of faulty habits, the cooperation and intelligence of the pupil and the ability of the teacher all play a part in the ultimate functional result.

Recent investigations have shown that adults may speak equally well with preponderance of thoracic muscle movement, or of abdominal muscle movement.⁽¹⁴⁾ Investigation of this aspect in children has not been carried out, and is well worthy of further study; it is possible that added knowledge in this direction may be a rational guide to teachers as to the most advantageous method of breathing to be encouraged in the post-operative training of cleft palate children.

It is beyond the scope of this paper to present a complete syllabus of training; sufficient, however, has been said for the reader to appreciate the value of a teacher specially fitted for the post of reeducator.

STATISTICAL DATA.

The 36 operations in the series were made up of 20 palate repairs and 16 lip repairs.

I have done both harelip and palate repair on only three of the children concerned; this means that the 36 operations involved 33 children, 18 boys and 15 girls. A number of those whose lips I have already repaired are awaiting palate operation, while a number of the palate operation patients had previously been operated on for lip cleft by some other surgeon.

Of the 16 harelip patients, 13 had associated palate clefts, while three had no palatal defect. Among these 16 lip clefts, 13 were unilateral and three were bilateral.

The three bilateral lip clefts involved complete separation of the premaxilla as well as hard and soft palate defects; that is to say, they belonged to the type designated complete bilateral lip-palate cleft.

Among the 20 palate operation patients, 11 had previously been operated on for a cleft lip, while nine had no congenital lip defect.

If the 33 children are taken as a series, 21 had a lip and palate deformity, while 12 had a single deformity only.

Two deaths occurred in the series, a mortality rate of 5.5%. The details of these two cases are considered later.

If any generalizations can be drawn from so small a series, it would appear, firstly, that the great majority of harelips are associated with cleft palate, while approximately half the cases of palate cleft involve no other defect; secondly, that approximately 60% of children with congenital defects of the lip-palate region have a dual malformation.

Twelve harelip patients were operated on before they were three months old.

The individual ages and weights of this group at operation are shown in Table I.

TABLE I.

Name.	Age. (Weeks.)	Weight.	
		Ib.	ozs.
C.A.	2	8	8
R.N.	3	8	14
R.E.	3	8	15
J.L.	5	9	8
J.L.H.	6	9	12
B.P.	7	8	8
R.J.	7	9	10
P.K.	8	9	15
L.J.	10	8	9
R.B.	11	9	8
J.D.	11	8	10
D.R.	12	9	15

The average age was 7.1 weeks and the average weight was nine pounds two ounces.

The remaining four harelip patients were operated on at four months, six months, six months and seven months of age. Three of these four children came from distant parts of the State, and the fourth was a baby who presented a difficult feeding problem; he lived for months at a baby clinic, and in spite of the fact that he had no actual difficulty in swallowing, he weighed only nine pounds when operated on at the age of six months. He made a good recovery from the operation, but six months later contracted *otitis media* and mastoiditis and is still in hospital.

The one death among the lip cases was that of a child who died of pneumonia five days after operation. He was eleven weeks old, and weighed nine pounds eight ounces at operation, so he was actually older and heavier than the average among those who had their operation before they were three months old.

The palate cases fell into the age groups shown in Table II.

TABLE II.

Age (Years).	Number of Cases.
1 to 2	4
2 to 3	—
3 to 4	2
4 to 5	5
5 to 6	4
6 to 7	1
7 to 8	—
8 to 9	3
9 to 10	—
10 to 11	1

The youngest patient was operated on at the age of thirteen months.

It is illuminating to see that only 20% of patients were operated on before the end of the second year.

Reexamination showed without doubt that the children operated on after four years of age showed less satisfactory improvement in speech than those in whom the palate was closed before speech was properly established.

It was noticed, however, that delay in operation seemed more detrimental in cases in which both hard and soft palate were involved than in cases in which the cleft was in the soft palate only.

The reasons for this unfortunate delay in operation are not hard to find. Isolation and consequent difficulty in making a trip to the distant city, financial considerations involved in such a trip, failure to realize the importance of early operation and a general idea that surgery is fraught with grave risk and little chance of success, all play their part in creating this unsatisfactory state of affairs.

Efforts could well be made, through collaboration with country doctors, charitable organizations and other means available, to allow of these children being operated on at the optimum age.

The one death in the cleft palate series occurred from secondary hæmorrhage; the patient was a boy, aged three years. Soon after entering hospital he had some teeth extracted and suffered from profuse hæmorrhage. He received prolonged treatment for the subsequent anæmia and showed no stigmata of any blood disorder.

His bleeding time was four and a quarter minutes, his coagulation time was four and a half minutes and his platelets were normal. Four months after admission to hospital, when his blood count was almost back to normal, cleft palate closure was attempted in two stages; no undue hæmorrhage occurred during or after the first operation or during the second operation. Ten days later, however, he had a sudden severe hæmorrhage; he continued to bleed in spite of all efforts and died two days later.

END RESULTS OF CASES UNDER REVIEW.

Lip Operations.

Good union was always obtained by the lip operations, but one child with a complete bilateral cleft required reoperation twice. This child ultimately returned home with a reasonably good lip and very little retrognathism (Figures XXVIII and XXIX).

No difficulty was experienced in producing a full vermilion border and an everted lip; and in no case was there a definite break in the horizontal line of the muco-cutaneous junction at the lower end of the suture line.

In a number of the earlier operations fear of leaving an ultimate notch in the red mucosa resulted in too large a hillock being left in the region of the red mucosa suture line; this, however, is a minor fault and no attempt to correct the contour of the vermilion border should be made for at least two years after the original operation.

In some of the earlier lip cases which were associated with a wide alveolar gap, a silver wire circular suture was passed between the premaxilla and maxilla as a preliminary measure. This was done in the cases in which it was felt that the lip could not possibly be reformed over the existing

gap; there is no doubt that this is an illogical procedure, as it tends to bring about undue retro-



FIGURE XXVIII.

P.K.—Originally a case of complete bilateral lip-palate cleft similar to that shown in Figure V. Note the mobile upper lip and good naso-labial distance. This picture and the succeeding one have come from the canefields of North Queensland.

displacement of the premaxilla; in addition it is certain to injure one or more tooth germs, and, if the wire is tightened sufficiently to exert extreme tension, considerable damage may be done to the underlying bone.

It was also brought home to my notice during my reexamination of certain children that a very slight degree of retrognathism of the upper jaw, following operation, tended to become more pronounced during the two or three years after operation.

It is remarkable how well the reformed lip will mould the underlying bones into their normal anatomical relationship, and patients who are discharged from hospital with quite a large alveolar gap return in several years with the edges of the gap actually in contact.

Increasing operative experience has led me to the

belief that sound lip union over an alveolar gap is possible without wiring, except in the most extreme cases.



FIGURE XXIX.

P.K.—The profile view shows the short columella and the very slight degree of retrognathism.

The later patients in the series showed a satisfactory approximation to the "baby face" profile (Figures XXX and XXXI).

In complete unilateral lip-palate clefts, asym-

metry of the base of the columella and some degree of flattening and eversion of the nostril on the affected side persisted in a number of the cases, although the results were otherwise satisfactory. In spite of every care and certain improvements in technique, this remains the most difficult deformity to overcome; even when the immediate post-operative result looks well-nigh perfect, the fact that the underlying bones—the premaxilla on the sound side and the maxilla on the affected side—are not in their normal relative positions, tends to reproduce the deformity as the wound is healing.



FIGURE XXX.

B.P.—Aged nine weeks. Originally an extreme case of complete unilateral lip-palate cleft. Photograph taken fourteen days after operation. Note the firm union, desirable fullness of lip and absence of stitch marks. There is some flattening of the affected nostril, which is actually exaggerated in this photograph.

Writers⁽²⁾ with a vast experience are still prepared to admit that it is impossible to obtain a

result which is 100% perfect. To my mind this very fact should stimulate our efforts to attain results as near to the ideal as is humanly possible.

I quickly learnt that photographs may minimize residual deformities if taken from certain angles, or if subjected to the retoucher's art. All the photographs here reproduced have been taken with the idea of giving a true indication of the end-results, and have not been retouched in the least degree.

Palate Operations.

In a considerable number of cases a gap appeared at the anterior end of the soft palate about ten days after operation and closed again completely within a further five weeks.

In some of the cases of hard and soft palate cleft a small persistent gap remained in the region of the hard palate. In nearly all these cases, however, defective tooth formation rendered a dental plate ultimately necessary, and this gap was correspondingly unimportant.

The soft palate was completely closed in every case. In the majority of cases the uvula failed to unite com-

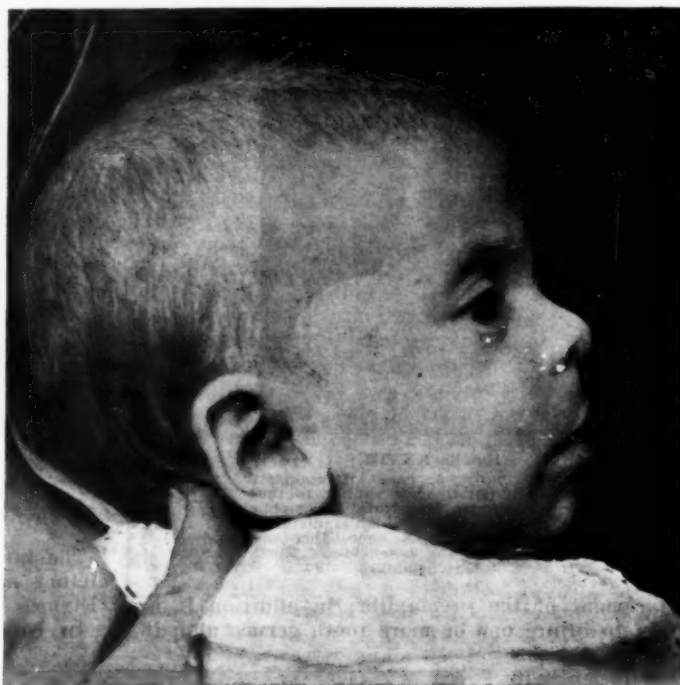


FIGURE XXXI.

B.P.—Note the desirable prominence of the upper lip and baby-face profile. The lip has been reformed over a wide alveolar gap.

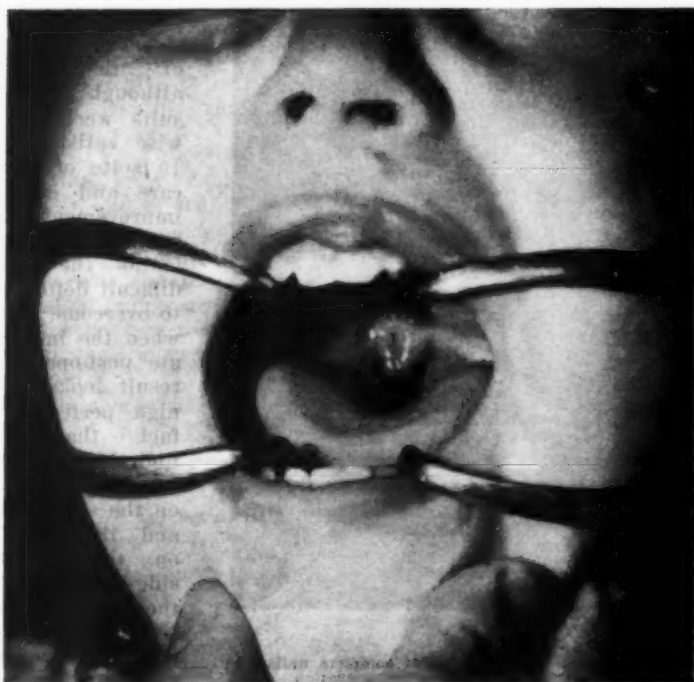


FIGURE XXXII.

J.S.—Aged three years. Originally a post-alveolar palate cleft. Studio photograph taken three weeks after operation to show firm union of palate without scarring and retroposed and mobile soft palate. The marks on the uvula are photographic highlights.

pletely. This, however, in my opinion, is a quite unimportant defect.

In the earlier cases the palato-pharyngeal isthmus tended to be too wide; in other words, the soft palate had not been pushed back sufficiently. In the later cases a satisfactorily small palato-pharyngeal isthmus and a mobile soft palate have been achieved (see Figure XXXII).

All mothers were given a pamphlet setting out a simple method of speech reeducation, and were exhorted to spare no pains in improving the child's articulation. This, however, was a poor substitute for expert training, and the absence of a special reeducation clinic was manifest in the delayed improvement in speech in many cases.

Reexaminations showed without doubt that the mentality, not only of the child but also of the mother, exercised a profound influence on the degree of improvement noted.

The vital importance of the unconscious mimicry exercised by a child during the period of its early development was brought home to me very forcibly by the following case:

I noticed that the mother of a child who had recently had a cleft palate operation spoke in the typical explosive way one is accustomed to find with unrepaired cleft

palates; on looking into her mouth I was surprised to find a perfectly normal palate, and she assured me that she had never had any operations. It appeared, however, that her mother had a persistent palate cleft. In this case the normal influence of the parent had been reversed; a daughter with a normal palate had copied the defective speech of a mother with a palate cleft, and had never learnt to use her lips and tongue and soft palate in the proper way.

This incident stressed in my mind the necessity for constant care in the speech of the parents, even if the child is having daily speech lessons at a special training centre.

CONCLUSION.

While admittedly this series of cases under review is a relatively small one, a sufficient number of end results have been critically appraised to allow of progressive improvement in technique.

A proper understanding of the embryological maldevelopment in any given case and a sound knowledge of the surgical anatomy of the lips and palate are the only sure foundations on which the superstructure of operative technique can be safely built.

Team work during the actual operative procedure is essential, and nurses specially trained for the purpose should be responsible for the immediate post-operative care.

A careful follow-up of all children who have undergone facial cleft operations is advisable.

Close collaboration between the paediatric surgeon, paediatric physician, dentist and speech expert is necessary if the best results are to be obtained.

Adequate post-operative speech training is undoubtedly the coping stone of successful treatment.

I have for a long time advocated the establishment of a special reeducation centre for these patients in Queensland. In order to obtain the best results, prolonged and skilful reeducation is required. An elocutionist adequately trained in the vagaries of cleft palate speech is urgently needed; a clinic should be established where speech training can be appropriately combined with the exigencies of ordinary education, and until this ideal becomes an established fact our ultimate functional results in cleft palate surgery will remain disappointing.

Any efforts spent in an endeavour to improve the outlook and ultimate well-being of these tiny sufferers are more than repaid by the feeling of satisfaction one has on realizing that they are able to take their place in society, free from the haunting fear of self-conscious inferiority to which they would otherwise be prone.

Addendum.

Since writing this thesis I have operated on approximately another thirty patients with no deaths, and with the exception of a few minor details have not had occasion to alter the technique herein described.

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Reports of Cases.

CONICAL CORNEA WITH LENTICULAR ASTIGMATISM.

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A MAN, aged thirty-one years, was suffering from bilateral conical cornea. With corrective lenses of -8 diopters (spherical) before the right eye and -2 diopters (spherical) and -3 diopters (cylindrical-axis 90°) before the left eye, the visual acuity of each eye was $\frac{1}{20}$. He was tested with trial contact lenses, which carry a spherical correction on the outer surface. His visual acuity with a contact lens of -2 diopters (spherical) on each eye was $\frac{1}{10}$ in the right and $\frac{1}{12}$ in the left eye.

Contact lenses were fitted according to the Hamblin-Dallos technique. One pair of "near-fit shells" were ground and polished, reground and repolished several times, until they could be worn by the patient for at least six hours. Final lenses from these patterns with a lens of -2 diopters (spherical) ground on the glass cornea were supplied by Hamblins, London.

The patient complained that, although he was able to wear them on his eyes from eight to twelve hours, his vision was not much improved. Retinoscopy, carried out with the contact lenses *in situ*, revealed myopic astig-

matism, and cylindrical lenses of -2.25 diopters at 180° before the right eye, and -1.75 diopters at 64° before the left eye, increased the visual acuity of each eye to $\frac{1}{8}$.

The astigmatism is lenticular. This presents a rare but important difficulty in the prescribing of contact lenses, because, although the corneal astigmatism is overcome by the optically perfect surface of the contact lens and any correction is only a spherical addition ground on the surface of the glass cornea, it is almost impracticable to grind the lenses to include cylinders to correct inherent lenticular astigmatism. This patient needs to wear spectacles as well as contact lenses.

It is also worth recording that the majority of patients with conical cornea are hypermetropic. This patient is myopic. The explanation is that there is a moderate degree of keratoconus as well as keratoconus.

Reviews.

A BOOK ON FIRST AID.

A PRESSING need has been met by the publication of a small book on first aid, entitled "First Aid at a Glance".¹ Though the author, William H. London, has not had a medical training, he has produced a volume which may safely be put into the hands of the many serious folk at present attending first-aid classes. Those who have to lecture to these classes could with advantage use it as a text-book. The subject matter is discussed in several chapters; then there are sections on general principles, on anatomy and physiology, on the treatment of wounds, on fractures, dislocations and sprains, on the circulation of the blood and the arresting of hemorrhage, on various injuries, on resuscitation, on unconsciousness, on poisoning and on war gases. On the whole the information is correct and the instructions are sound. In a book such as this one of the chief points is not to give instruction that may be harmful. We are sorry to see a fairly detailed description of the application of a long Liston splint to a fractured femur, while no mention is made of the Thomas splint. It is far safer to allow a patient to lie where he has been injured while efforts are made to obtain a Thomas splint and the help of someone who knows how to use it than to allow an inexperienced person to attempt the application of a long straight splint. However, it is very unlikely that persons for whom this book has been written will have to deal unaided with a fractured femur. The same statement would, of course, be true of other serious conditions to which reference is made. We repeat our recommendation that in the limited sphere for which it has been written this book will be most useful.

DISEASES CAUSED BY FUNGI.

SKIN lesions caused by pathogenic fungi contribute an important part to the work of the dermatologist. The general practitioner and especially the country practitioner must know sufficient about these conditions to be able to recognize them or at least to suspect their nature. This is not always an easy matter even for the specialist, and much less so for the family physician. In "An Introduction to Medical Mycology"² Dr. George M. Lewis and Dr. Mary Hopper give an account, with 70 excellent full-page

plates (some containing six to twelve separate photographs), of the pathogenic fungi and the lesions they may cause. The authors are dermatologists, so that the subject matter deals in detail more particularly with the fungi affecting the skin and adjacent parts. Very little information is given about torulosis, of which several examples affecting the meninges and one causing a myxomatous-looking mass in the pelvis have occurred in Australia, or about the fungi that may be met with occasionally in the respiratory system. Actinomycosis is included, though it probably comes more appropriately under the purview of the bacteriologist.

After some short introductory accounts of the subject, under the heading of "Immunity and Cutaneous Sensitization", an historical summary is given of the work done with trichophytin and of the various reactions to fungi and their products. The chapter on allergic manifestations due to fungi is a very short one, dealing principally with asthma. Chapter IX is long and deals with the superficial mycoses; it is illustrated with a large number of excellent photographs of the various ringworms affecting the scalp, glabrous skin, nails *et cetera*, and of other conditions due to fungi. The next chapter on the deep mycoses (essentially or potentially systemic) is not so full and deals with actinomycosis, mycetoma, sporotrichosis, blastomycosis *et cetera*. Part II treats with laboratory methods, giving accounts, again well illustrated, of the fungi themselves in the tissues, of their morphology and of their cultural characteristics. Attention is called to artefacts and bodies whose exact nature is still in doubt. The work before us should prove a useful one, almost a necessary one, to the dermatologist. We consider it also of value to the general practitioner, who may have to diagnose, or, in the country, treat, various skin lesions and who would be greatly helped especially by its very good photographs in recognizing those due to fungi.

DIET AND NUTRITION.

"DIET AND NUTRITION", by Dr. V. L. Collins, Melbourne, is described by the author, who was formerly medical superintendent of the Children's Hospital, Melbourne, as a synopsis for nurses and students of dietetics. It is an excellent brochure of forty pages for the busy practitioner as well as those for whom it is written.³

The author points out the value of diet in preventive medicine and stresses the importance of balance; he warns his readers against fads and shows that the increase in knowledge of food constituents and values has exploded many theories of the adequacy of diet for the population at large, to say nothing of growing children and expectant mothers.

Descriptions are given of the essential constituents of food and chemical composition of the components. Caloric values and vitamins are fully discussed in spite of the smallness of the work. In his warning against synthetic vitamins the author writes: "As almost certainly many more of these substances will be discovered, it is essential that our dietary supply of vitamins should be obtained from natural sources. If concentrated or synthetic vitamins are used, there is a grave danger that the undiscovered vitamins will be omitted. Though vitamin concentrates have a place in medical treatment, the foods rich in vitamins should provide the supply for the normal person."

The value of water and protective foods is insisted upon, and useful tables of food values, typical diets and human daily requirements are appended. In his tables of food values the author gives detailed information as to the amount of carbohydrate, protein and fat in grammes per ounce, of calcium phosphorus and iron in milligrammes per ounce, and international units of vitamins per ounce as well as the calories per ounce. The book is a very useful summary for the busy practitioner.

¹ "First Aid at a Glance", by W. H. London, with a foreword by F. A. Maguire, C.M.G., D.S.O., V.D., M.D., F.R.C.S.: 1939. Australia: Angus and Robertson Limited. Foolscap 8vo, pp. 181, with illustrations. Price 2s. net.

² "An Introduction to Medical Mycology", by G. M. Lewis, M.D., and M. E. Hopper, M.S.: 1939. Chicago: The Year Book Publishers Incorporated; Melbourne: W. Ramsay Proprietary Limited. Crown 4to, pp. 323, with illustrations. Price: \$5.50 net.

³ "Diet and Nutrition: A Synopsis for Nurses and Students of Dietetics", by V. L. Collins, M.D.: 1939. Melbourne: W. Ramsay (Surgical) Proprietary Limited. Demy 8vo, pp. 39. Price: 2s. net.

The Medical Journal of Australia

SATURDAY, MARCH 16, 1940.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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MEDICAL BENEVOLENCE.

THE man who first declared that charity began at home was almost certainly not a medical practitioner, for it is a curious fact that members of a profession who give to the poor and needy in the community with such open-handed generosity, have from time to time to be reminded that certain of their brothers in medicine are in need of help. The reason for this is not clear. Most likely it is that calls from other groups in the community are loud and insistent, benevolent associations and societies of various kinds are well organized, their committees are composed of influential people who are determined that the objects of their patronage shall not be overlooked or forgotten, and all kinds of means are used to achieve this end. Further, those who are to receive the gifts of such associations or societies are generally known by the community at large to be in need. The poor and needy in the medical profession are a charge upon it and upon it alone, and though their identity is not known to many, their need is none the less urgent. Most medical men in Australia who attend to their practices are able to earn a satisfactory

living. A few, very few, may become wealthy. The majority, if they are able to educate their children and give them a good start in life, are content. There are others doubtless who cannot do this, and again there are a few who, through no fault of their own, have fallen on evil days—illness or some other calamity has overtaken them and they have no means of livelihood. Some of them die and leave children to be educated, and, maybe, their wives are not in good health and cannot earn a living. It is on behalf of these hapless members of the medical fraternity that an appeal is made. Approximately five years have elapsed since the attention of readers was drawn in these pages to the needs of the medical benevolent associations in the several States, and the call is made now in the hope that the response will be ready and generous.

Each State, with the exception of Queensland, has some form of medical benevolent fund. In making this statement we do not refer to the Medical Officers' Relief Fund (Federal), which was created in connexion with the war of 1914-1918 and which is in a different category from the medical benevolent associations. The fund in Tasmania is quite small and consists of the unexpended portion of an amount that was raised some years ago for a specific purpose. In the other States the fund is well established and payments are made regularly to beneficiaries. Some of the associations are of long standing. The Victorian body, for example, was founded in 1865. The sum of money invested in various securities is slightly over £9,000, and during 1939 subscriptions received amounted to £178; over £399 was paid to beneficiaries. The Medical Benevolent Association of New South Wales had its beginnings in 1868; it has assets amounting to slightly less than £5,000, and during 1938 subscriptions and donations and a sum received for a special Christmas appeal came to £717. At the same time the subscribers number only 400 out of the 1,600 members of the New South Wales Branch of the British Medical Association. Payments to beneficiaries amounted to £877. The assets of the medical Benevolent Association of South Australia, which was established in 1881, are £4,445. During last year subscriptions amounted to only £18 and

the sum of £120 was given to widows and other dependants of deceased medical practitioners. The Medical Benevolent Association of Western Australia was founded in January, 1930 (a sub-committee of the Western Australian Branch of the British Medical Association which had been in existence for a few months was its starting point). It started with seven life members and 84 members. Since then two life members have been added and nine members; there are 300 practitioners in the State.

From the foregoing it cannot be claimed that the medical profession in Australia is generous to its poor and distressed brethren or to those dependent on them. In South Australia particularly disappointment has been expressed because the association has not been in a sound enough financial position to contribute towards the education of the children of deceased or distressed medical practitioners. A determined effort should be made to augment the funds of these bodies, so that the totally inadequate sums given to the needy may be increased. In most of the States a practitioner may become a life member of the association by the payment of a lump sum, and others are termed subscribers in virtue of annual payments. In some States an effort is made to secure the payment of a subscription to the Medical Benevolent Association at the same time as the annual subscription to the Branch of the British Medical Association is paid. This is a method which should be encouraged, because failure to send a donation to the benevolent fund is sometimes an oversight rather than deliberate neglect. In South Australia a scheme was suggested a year or two ago whereby members would take out insurance policies for £100 or more, maturing in ten to twenty years, according to the age of the proponent, and the policies were to be assigned to the benevolent association; action on this excellent idea was, however, temporarily deferred.

Whatever effort is planned to augment the funds of these associations should be made without delay. The cost of living is rising owing to war conditions and many people are practising economy. This is understandable, but the economizing should not

extend to the funds of these associations. The necessitous persons who are given a pittance by these bodies will feel the hardship of having to pay war-time prices more than medical men in active practice will feel them. And let us close with a repetition of the statement that these people are a special charge upon the medical profession.

Current Comment.

ARTHRITIS.

THERE are few diseases more difficult to treat than arthritis, whether it be of the rheumatoid or of the hypertrophic variety. Some years ago a distinguished physician, who had made a lifelong study of rheumatoid arthritis, confessed that of the many arthritides he had treated, he could recall only two patients whom he had cured. Ralph Pemberton¹ observes that our lack of success in the treatment of arthritis is a matter that the medical profession must deplore and the laity is bound to criticize. Perhaps there has been an element of defeatism in the attitude of the profession towards arthritis. Certainly there is at present no single remedy which will reach the heart of this disease, nor do we know of any single causative factor underlying it. Pemberton believes that the outlook of the profession on arthritis is slowly changing. It is now believed that focal infection plays a comparatively unimportant role in its causation; and there is reason for optimism in the opinion recently expressed by Hench that the pathological changes underlying rheumatoid arthritis may be more easily reversible than has been supposed. The principle of reversibility is more or less accepted for fleeting rheumatic disability, such as a stiff neck, but is ignored or overlooked in the more advanced stages. The arthritic is abnormal, not only because of alterations within his joints, but because of alterations within his body elsewhere, perhaps even because of alteration in his mental make-up. If these functional disabilities can be reversed, joint changes may possibly be reversed. Successful treatment, according to Pemberton, may be achieved by a systematic attempt at readjustment of all the "dislocated physiologic processes" characterizing this disease. In short, like the lady in Ruth Draper's sketch, the patient must be "completely made over". In all seriousness, this is what the patient with arthritis needs.

But how to set about it? The most important single factor in the treatment of arthritis is rest. Pemberton points out that true rest is a mosaic and that peace of mind and body does not always, nor even often, mean complete inactivity. Then, too, the mild deficiency syndromes are important. An

¹ *The American Journal of the Medical Sciences*, November, 1939.

unbalanced diet, the presence of infection, or changes in gastro-intestinal function may produce a deficiency where no obvious lack of vitamins in the food exists. Atrophy of bone, subvitaminosis, anaemia, altered plasma proteins and tissue oedema are commonly found. The arthritis of old age may be due not to old age itself, but to prolonged deficiencies in nutrition from poor dietary habits. Faulty posture, producing lordosis, a narrow costal angle and visceroptosis, has been considered an important contributing factor.

Lacking that final illumination of arthritis which is our goal, we must, in the present half-light, use all such well considered measures as are available to us. . . . To know how to utilize the components of rest; to stimulate here and sedate there; to appreciate the significance of deficiencies or surfeits, to recognize and correct them; to discover an infectious or other morbid nidus, to understand whether and when to remove it; to reeducate the patient towards his problem; to adjust his somatic and local mechanics; in sum to "equilibrate" the arthritic—this constitutes, in the opinion of the writer, at least an approach towards a specific therapy which must be experienced to be understood.

Pemberton's article, based on his presidential address at the annual meeting of the American Rheumatic Association, contains much excellent material. Perhaps because it is condensed, it is extremely difficult to read. The accurate, thoughtful phrases sound a little stilted and creak stiffly, in a sort of chronic hypertrophic rheumatic English, as though the author were trying by his manner of writing to describe the disease, and the slow, patient, laboured grinding work that is necessary to elucidate its cause. However, it is ideas that matter, and Pemberton gives evidence of having done a good deal of sound thinking.

GLOBIN INSULIN.

If the normal body insulin is poured into the circulation in correct amounts as it is required for proper carbohydrate metabolism. No method has yet been devised of imitating this in the treatment of diabetics. The patient treated with ordinary insulin is subject to great fluctuations in his blood sugar content because of the brief period of effectiveness of this type of insulin after injection. When zinc-protamine insulin is used there is a steady flow of insulin into the circulation during the greater part of twenty-four hours after an injection, whether the demands are greater or less; therefore, the prevention of hypoglycaemia during the hours of sleep is a difficult problem in the treatment of diabetes with zinc-protamine insulin. Ordinary insulin is rapid in its action; zinc-protamine insulin does not reach its maximum effectiveness for some hours after injection. A substance nearer the ideal than either of these would be one that acted rapidly and then continuously over the whole period when additional insulin activity was required, but could be relied on not to cause hypoglycaemia during the resting and fasting period. The fulfilment of these conditions seems to be approached by a mixture of

insulin, globin and zinc. Louis Bauman has recently recorded his clinical experiences with this so-called globin insulin.¹ He points out that Reiner, Searle and Lang have shown by experiments on rabbits and dogs that the full activity of globin insulin develops not much later than that of ordinary insulin but lasts more than twice as long. Bauman has administered a preparation consisting of 1,000 units of insulin, 38 milligrammes of globin and three milligrammes of zinc chloride. When this was buffered to a pH of 6.1 with di-sodium hydrogen phosphate, more than 99% of the insulin was found in the precipitate. A clear solution at a pH of 4.0 was also used. There was no significant difference between the effects of the solution and the effects of the suspension, either on the laboratory animal or on the diabetic subject.

Bauman has treated 25 patients with globin insulin during a period of two years. A single injection is given half an hour to three-quarters of an hour before breakfast. The maximum dose given by him has been 145 units. Daily doses of 60 units or more have been given for two years without any apparently harmful effect. If the dose is too large, hypoglycaemia may occur in the late afternoon; that is, seven to twelve hours earlier than hypoglycaemia produced by zinc-protamine insulin. In some cases, usually severe, "the same unexplained daily variation in sugar excretion is encountered as when the regular or protamine preparations are used". Where a dose of more than 100 units was required, complete control throughout the whole period of twenty-four hours was often impossible.

Periods of hyper- and hypoglycaemia may be unavoidable, but they often occur when several doses of standard insulin are used, and certainly when a single dose of protamine insulin is administered. However, we have encountered several cases, uncontrollable with protamine zinc insulin, which were regulated to greater satisfaction with single doses of 80 to 120 units of the globin compound.

Mild and moderately severe diabetes was adequately controlled with a single daily injection of globin insulin.

There are several important points brought out by Bauman's investigations. In the first place, local skin reaction after injection never occurred. Such local reactions are often produced by zinc-protamine insulin. The second important point is that globin insulin produces its maximum effect rapidly, a distinct advantage over zinc-protamine insulin. Thirdly, globin insulin is effective for a much longer period after injection than ordinary insulin, but not nearly so long as zinc-protamine insulin; therefore, if a morning injection only is given, hypoglycaemia will not occur during sleep—that is, at a time when it cannot be readily recognized and controlled. The results are encouraging; but they are not sufficiently convincing to warrant the replacement of zinc-protamine insulin by globin insulin. Zinc-protamine insulin's value has been proven in many thousands of cases; globin insulin's remains to be proven. Perhaps each will have its sphere of usefulness.

¹ *The American Journal of the Medical Sciences*, October, 1939.

Abstracts from Current Medical Literature.

DERMATOLOGY.

The Bacteriology of Cutaneous Tuberculosis.

J. KAMIENSKI (*Tubercle*, October, 1939) has inoculated guinea-pigs with material obtained from the cutaneous lesions of eighteen persons suffering from *lupus vulgaris*; 16 of the animals developed tuberculosis and tubercle bacilli were cultivated from the organs of 15 of them. These bacilli were found to be of the human type in 10 of the cultures and of the bovine type in one, while in four the type could not be ascertained. Similar studies in two cases of *scrofuloderma* yielded a bovine type of bacillus in each instance. Guinea-pigs inoculated from the lesions of *erythema induratum* and from papulo-necrotic tuberculides did not develop tuberculosis.

Colloidal Calomel Ointment.

T. CORNBLETT, A. H. SLEPYAN AND M. H. EBERT (*The Journal of the American Medical Association*, November 11, 1939) describe briefly the clinical results obtained by the use of an ointment containing calomel in colloidal suspension in the treatment of a number of common skin affections. The preparation consisted of calomel, in which the particles were 0.5 μ or less in size, were in aqueous suspension with gelatin, and were incorporated in an ointment base. The greatest value was in *impetigo contagiosa*, the eruption being cleared in one-third to one-half the time required for ammoniated mercury preparations. Other conditions in which the preparation was used were retroauricular infective dermatitis, infected leg ulcers, infectious eczematoid dermatitis, and a number of non-infective skin lesions. Good results were obtained particularly in retroauricular infections, where the cleanliness of the treatment added to its value. Of the affections in which no benefit was obtained are mentioned *lichen planus*, *paronychia* due to yeast infections, *pityriasis rosea*, *tinea circinata*, *lupus erythematosus* and *lupus vulgaris*. The so-called eczematoid ringworm also failed to be favourably affected.

The Senear-Usher Syndrome.

U. J. WILE AND H. L. ARNOLD, JUNIOR (*Archives of Dermatology and Syphilology*, November, 1939), review in detail the literature, and report and comment on six cases of the Senear-Usher syndrome. In reviewing the literature the authors made no attempt to verify the correctness of diagnosis. In only three instances was a diagnosis of Senear-Usher syndrome made. Many conditions were originally diagnosed as *lupus erythematosus*, whilst others were regarded as pemphigus. Points of importance discussed

included duration and course, sex incidence, presence or absence of mucous membrane lesions and of Nikolsky's sign, the histological study and blood picture. It was evident from the variety of facts reported that the Senear-Usher syndrome as a distinct entity was difficult to describe as one with a definite symptomatology. The condition as originally described by Senear and Usher has to be distinguished from both *lupus erythematosus disseminatus* and pemphigus, though possessing features common to both. In view of the majority of the features resembling pemphigus, Senear and Usher concluded that they were dealing with a syndrome like pemphigus in which "typical lesions of *lupus erythematosus*" also occurred. The authors carefully analysed the clinical details of the six cases presented by them. Diagnoses made at varying times included *dermatitis herpetiformis*, *pemphigus vulgaris* or *pemphigus foliaceus*, while in two instances Senear-Usher syndrome was diagnosed when the patient was first seen. No mucous membrane lesions were observed. The blood picture was equivocal. Chronicity with remissions and exacerbations was the rule. Nikolsky's sign was present in every patient at some time. The eruption was present for at least eight weeks before a definite diagnosis could be made. Regarding treatment, moccasin snake venom and general ultra-violet irradiation helped in some degree. Blood transfusion, "Germanin" and sulphanilamide were tried, the drugs with little effect. The histology of the lesions was nondescript, but did not resemble that of *lupus erythematosus*. Absent in most instances too were albuminuria and leucopenia. Against pemphigus was the presence of pruritus, absence of mucosal lesions and the chronicity. The authors conclude that, in the light of present knowledge, the syndrome described by Senear and Usher appears to be a distinct entity.

Keratoderma Blenorrhagica and Psoriasis.

ERVIN EPSTEIN (*Archives of Dermatology and Syphilology*, October, 1939) discusses the clinical findings in 75 patients suffering from *keratoderma blenorrhagica* and 33 with arthropathic psoriasis, and attempts to show that these conditions are separate entities, in contradistinction to Adamson, who proposed the theory of their identity on several grounds. In considering the aetiology of both conditions, the author discusses age, sex and heredity. The age of onset of the complete syndrome gave the highest percentage in both instances in the twenty to forty group. Regarding sex, *keratoderma blenorrhagica* is practically confined to males, whereas arthropathic psoriasis occurs over 50% in females. Of psoriatic patients, 25% gave a family history of psoriasis, but in the gonorrhoeal cases none was forthcoming. Histologically, no definite diagnostic

distinctions could be made. The clinical picture showed certain differences, particularly in the distribution of the eruption, and also in the detailed appearance and evolution of each individual lesion. Regarding distribution, psoriasis was a much more generalized condition and the sites of election were usually involved, whereas in blenorrhagic keratoderma the feet were affected in over 90%, but the elbows rarely became involved. Regarding individual lesions, the scraping test gave entirely different results in gonorrhoeal compared with psoriatic cases. The psoriatic patient frequently had his or her skin eruption long before the development of arthritis, which was commonly of a small-joint type. In the Neisserian infection, skin eruption and arthropathy frequently appeared together, and the disease was short, acute and self-limited in contrast with psoriasis, which was chronic with intermissions and relapses. Nail lesions were present in both diseases. Mucous membrane lesions, absent in psoriasis, sometimes were present in gonorrhoeal keratoderma. The response to artificial fever therapy, in the author's experience, was much better in the gonococcal condition. Laboratory findings did not help greatly. Blood investigations were inconclusive. In particular the complement fixation test for gonorrhoea failed to assist materially and proved unreliable. The author concludes that Adamson's postulates are based on superficial resemblances between the two conditions, and that the many points of difference on detailed examination support the view that the two dermatoses are separate and distinct.

UROLOGY.

Anterior Perinephritic Abscess.

VERGOZ AND LENCK (*Journal d'Urologie*, May, 1939) describe a personal case in which perinephric suppuration was limited to an anterior site, and have collected 19 cases from the literature. Such a type of lesion is rare, and the authors have paid special attention to diagnosis and route of drainage. Anatomically the perinephric fat forms a dense and fairly thick layer in the region of the convex border and the two poles of the kidney, and also over the whole of its posterior surface; but anteriorly it is only a very thin layer, or even absent, so that the renal surface here is practically in contact with the peritoneum. Perinephric infections usually arise secondarily to cortical renal infections, and the well-recognized defensive power of the peritoneum militates against their progress anteriorly. Posteriorly, however, the infection can develop and spread in fat, which is notoriously of low resistance. The main aspect of symptomatology is that the pain is anterior rather than lumbar; it is

deep in the hypochondrium, dull and diffuse. No radiation toward the shoulder or downwards in the typical renal fashion occurs with anterior suppuration. Palpation of the liver (or spleen) is painful, and suppuration in one of these organs (or the gall-bladder) may be diagnosed. The costo-vertebral angle may be tender on palpation, but no swelling or painful induration can be determined, as with the more usual posterior phlegmon. A common error in diagnosis is to mistake this affection for a retrocaecal appendicitis, since the tumefaction is deep in both affections, causing only a slight degree of muscular contraction anteriorly, while vomiting occurs in both. Radiography may help, in that the outline of both the kidney and the psoas muscle is obscured. Another important sign is elevation of the corresponding half of the diaphragm, with respiratory immobility. The infection is generally due to the *Staphylococcus aureus* and demands early incision; otherwise death may occur later from a slow general infection. In anterior suppuration the main difficulty lies in deciding the approach for evacuation. The incision will vary according to the following conditions. When the diagnosis is not made, a transverse upper abdominal incision is made, and if the intraperitoneal organs are found to be intact the peritoneum may be closed and the transverse incision extended around to the lumbar region to the site of suppuration. Alternatively, a most careful intraperitoneal barrage can be made with compresses and a direct incision made in the purulent collection, with a counter incision at a dependent point in the loin; a Mikulicz gauze pack drain protects the peritoneal cavity. When the diagnosis is made, the ordinary or classic lumbar incision should be avoided. It is necessary to secure direct approach to the anterior purulent collection without dislocating the kidney from its position. For this purpose the paraperitoneal route by the transverse anterior incision of Baxy is the best. This incision commences at the tip of the eleventh rib and extends anteriorly and medially to the mid-line. The perirenal fascia is recognized at its junction with the peritoneum and is incised there so that the anterior renal region may be explored.

Transurethral Treatment of Chronic Prostatitis.

A. MARINI (*Urologia*, March, 1939) states that, among the affections of the male genital organs, chronic prostatitis preoccupies both the patient and the medical attendant on account of its long duration and resistance to all forms of treatment. Apart from the more usual measures, the author is particularly interested in methods of injecting antiseptic solutions directly into the prostate gland. The rectal route is strongly opposed, for obvious reasons. Needle injection by the perineal route has been the

popular method in recent years. It is recalled that as early as 1838 Brodie punctured the prostate by needling, but with the object of aspirating pus. The author claims that, with the excellent instruments now available, needle puncture of the prostate can be efficiently performed endoscopically. Although only the periurethral regions of the gland can be reached, it is claimed that these are usually the more affected regions, and that in any case the medicament will diffuse well throughout the gland. The McCarthy panendoscope or resectoscope can be used to carry a special needle, to which a syringe can be fitted. The prostate is punctured in various parts of the prostatic urethra and a few drops are injected in each area. The treatment is repeated every six to ten days on four to six occasions, other treatment, such as diathermy, massage and irrigations, being used in the intervals. Lesions of the mucosa of the prostatic urethra can be treated at the same time, especially vegetating and oedematous lesions which block the seminal and prostatic outlets into the urethra; electrocoagulation of such lesions often allows reopening of such outlets.

Renal Resection.

L. BONANOME (*Urologia*, March, 1939) discusses the various possibilities of resection of portion of the kidney, particularly in calculous disease. He distinguishes between (a) polar partial nephrectomy ("renal amputation") and (b) median partial nephrectomy ("renal resection"). The former is commonly used under the name of "heminephrectomy", but more special attention is drawn to the median method in this article. The author describes fully a case of his own, in which a calculus was present in a pyocalyx in the middle region of the kidney. A portion of parenchyma surrounding this pyocalyx is resected, including the cavity containing the stone. A small opening, the neck of the major calyx leading to the pus cavity, appears at the bottom of the gap left after the wedge excision. This mucosal layer is accurately sutured with fine catgut, and so the possibility of the subsequent occurrence of fistula is excluded. The gap in the renal parenchyma is closed in the usual way by a deep suture of plain catgut.

Uretero-Intestinal Anastomosis.

E. G. PASTOR AND E. RIOSECO (*Journal d'Urologie*, February, 1939) make certain remarks after a study of the outcome of seven cases in which they implanted both ureters into the sigmoid colon. The Mayo-Copping technique was employed. It is admitted by the authors that such anastomoses lead to troubles in both tracts, and particularly in the urinary tract; but in spite of these, a certain proportion of patients live and, moreover, lead a comfortable existence. The authors' results have been good, four patients surviving and being in

good condition for one and a half to four years after operation. Infections and hydronephrotic complications were found at autopsy in the three fatal cases. It is admitted that the future is uncertain for the surviving patients, yet it is considered that the results justify the performance of this series of operations.

Extravascular Excretory Urography.

R. M. NESBITT AND D. B. DOUGLAS (*Journal of Urology*, November, 1939) draw attention to the special value of subcutaneous injection of "Diotrast" for excretory urography in infants. The technique advocated is both simple and successful in their hands. Twenty cubic centimetres of the 35% "Diotrast" solution are diluted with 80 cubic centimetres of normal saline solution. The injection is made at the angle of the scapula, 50 cubic centimetres being injected superficial to the dorsal aspect of the scapula on each side. Absorption is rapid, and flash exposures are made at 10, 20 and 30 minutes. There have been no complications in the authors' series.

P. S. ADAMS AND H. B. HUNT (*ibidem*), in discussing the diagnosis of Wilms's tumour in infants, advocate the intramuscular use of 35% "Diotrast" solution for patients who have small or occluded veins or who will not cooperate. In their technique 10 cubic centimetres or more are injected into each buttock; no indication of the optimum time for exposure is given. No claim is made for results superior to those of the intravenous technique, but it is claimed that satisfactory urograms are usually obtained by these methods, which obviate the necessity for cutting down on veins or for using the jugular vein or superior sagittal sinus.

Exposure of the Kidney.

T. B. MOUTAT (*British Journal of Urology*, June, 1939) commends the operative approach to the kidney devised by B. Fey. This consists in an incision along the upper border of the distal four inches of the eleventh rib and from the tip of this rib downwards and medially in the line of the external oblique muscle nearly to the iliac crest. In the upper part the periosteum is separated, care being taken to preserve the fibro-muscular arch at the tip of the eleventh rib. In its lower point the incision is deepened in the line of the fibres of the external oblique muscle.

The Action of Mandelic Acid.

R. VON WERZ (*Zeitschrift für Urologie*, May, 1939) is convinced from clinical experiments that the bactericidal action of mandelic acid is exerted merely because of its power of acidifying the urine. Therefore it is necessary to employ only the cheaper salts, such as hydrochloric acid, phosphoric acid or ammonium chloride as orally exhibited urinary antiseptics.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on September 21, 1939, at Sydney Hospital, Macquarie Street, Sydney. The meeting took the form of a number of clinical demonstrations by members of the honorary staff of the hospital. Part of this report appeared in the issue of March 9, 1940.

Lobectomy.

DR. M. P. SUSMAN showed four patients who had had the operation of pulmonary lobectomy for bronchiectasis. The first patient had had the middle and lower lobes of the right lung removed at two operations, the middle lobe having been removed seven months after the lower lobe.¹

The first of Dr. Susman's three other patients was a male, aged twenty-five years, who had complained of cough and sputum for seven years. Lately he had suffered from attacks of hæmoptysis. The daily amount of sputum varied from four to eight ounces. Bronchograms revealed saccular bronchiectasis of the lower lobe of the right lung. After a course of postural drainage and bronchoscopic drainage the lobe was removed. The patient was convalescent, and had less than half an ounce of sputum daily.

The next patient, a male, aged twenty-seven years, had had a productive cough since an operation for acute appendicitis several years previously. He had up to seven ounces of offensive sputum daily and bronchoscopic examination showed that it was coming from the lower lobe of the right lung. Bronchograms confirmed the diagnosis of advanced bronchiectasis of this lobe. Lobectomy was preceded by bronchoscopic and postural drainage. The operation was unusually difficult because there was no distinct plane of cleavage between the lower and upper lobes laterally. The patient made a good recovery and was about to be discharged from hospital.

Dr. Susman's next patient, a female, aged fourteen years, had bilateral basal bronchiectasis, confirmed by bronchoscopic and bronchographic examination. She had had a productive cough since early childhood. Dr. Susman saw the patient in consultation with Dr. W. E. Fisher, and agreed with him that, as the ultimate prognosis with medical treatment was bad, operation was justifiable. The patient was at the time of the meeting convalescing from the operation of excision of the lower lobe of the right lung, and it was proposed to remove the lower lobe of the left lung in three or four months.

Raynaud's Disease Treated by Surgery of the Sympathetic Nervous System.

DR. JOHN HOETS showed a male patient, aged twenty-one years, a Pole from Warsaw. His parents had undergone privations during the Great War, and probably both had avitaminosis. From infancy he had suffered severely from "chilblains" on hands, feet and ears. On his arrival in Australia about eight years previously he was a pathetic sight; both ears were covered with sores or superficial necrotic ulcers, and all the digits showed more or less loss of tissue from repeated small sloughs. At intervals the following operations were carried out: section of the sympathetic trunk below the inferior cervical ganglion, first on the right side and then on the left; lumbar sympathetic ramisection, first on the right side and then on the left. These operations had been carried out six years earlier, and resulted in a great improvement in his general condition. Both ears, both hands and the right foot were then practically normal in colour and degree of warmth, but the condition of the left foot was not so good.

¹This case was reported in a paper entitled "Pulmonary Lobectomy for Bronchiectasis", which appeared in THE MEDICAL JOURNAL OF AUSTRALIA of August 26, 1939.

During the winter he had had several attacks resulting in areas of necrosis followed by painful infected ulcers. He had been in hospital convalescing from amputation of the stumps of all toes on that foot.

Dr. Hoets drew attention to the fact that the patient was permanently totally incapacitated owing to loss of digits of hands and feet, but was not eligible for an invalid pension, being an alien. He also stated that a younger sister, born about a year before the family migrated from Poland, also suffered from Raynaud's disease, but not so severely, and had not lost any tissue from sloughing. She had been submitted to the same surgical procedures, which had resulted in complete relief; since operation no attacks severe enough to cause her to seek treatment had occurred.

Dr. Hoets then showed an unmarried woman, aged thirty years, an Australian, whom he had seen from the initial symptom about five years previously. She had come to the out-patient department complaining of a small painful lump in the pulp of the proximal phalanx of the right middle finger. This was thought to be a foreign body beneath the skin, and she was advised to have it explored. Next time she appeared, several weeks later, the finger was cold and cyanosed. The condition rapidly spread to the remaining digits of the hand, and the other hand and both feet soon were all affected. Bilateral sympathetic trunk section (cervical) and lumbar ramisections were successful in both lower limbs and in the right upper limb; but the condition recurred in the left upper limb, although the immediate post-operative effect had been good. Further operation (ganglionectomy) was performed on the left side, again with a satisfactory immediate result, only to be followed again by relapse. As a last expedient, periarterial stripping of the brachial was performed without any apparent effect. The left hand was now quite useless. The condition of the thumb and index finger was not so bad, although they were affected, but the third, fourth and fifth digits remained deeply cyanosed, cold, swollen and acutely painful. Stimulation of the skin by brisk stroking was followed by a temporary return of normal colour, and this soon relapsed. Injections of acetyl choline, "Padutin" *et cetera* gave no relief. Six months prior to the meeting the three affected digits were amputated. The thumb and index finger were much improved, so that such activities as knitting *et cetera* were possible. The patient still complained of pain and stiffness in both arms and legs, and was much relieved by massage and injections of acetyl choline, which were being administered twice weekly.

Dr. Hoets's third patient had undergone operation for section of the cervical sympathetic trunk for relief of pain and cyanosis only two weeks prior to the meeting. The patient, a man, aged twenty-eight years, had two years ago been pricked by a rose thorn. This had started a septic process which spread from the index to the middle finger of the right hand. Both these digits had been amputated. Following operation, the history was that the stumps and surrounding parts became blue, cold and extremely painful. When Dr. Hoets saw the patient in consultation at that stage, sympathetic trunk section was advised and carried out with good results. Pain had disappeared, the blue colour had been replaced by a healthy pink, and the hand for the first time since the thorn puncture was being used normally.

Buerger's Disease.

Dr. Hoets next showed a patient suffering from Buerger's disease, who had been operated on at the request of Dr. A. Holmes & Court. He had been receiving treatment by intermittent pressure with Clements's machine for several hours daily. Both lower limbs were affected, the right being the worse. Typical colour changes were produced by posture; the limbs became dull red when dependent and dead white when elevated. The feet were cold. The *dorsalis pedis* pulsation was just palpable. There was a small necrotic area on the right little toe and constant pain was complained of.

Following lumbar ramisection pain was greatly relieved and the feet had remained warm.

Sudeck's Atrophy.

Dr. Hoets's next patient, through a misunderstanding, did not present himself. Dr. Hoets described his condition as one of Sudeck's atrophy. The patient was a man, aged sixty-one years. The condition had developed following trauma to the left wrist. Operation was undertaken, but could not be completed, owing to troublesome venous hæmorrhage. After vain attempts to ligate the vessel, unsuccessful owing to the fragility of the walls, the wound was packed with gauze round two artery forceps clamping the vein. These were loosened two days later, and the packing was removed after another two days. Although the object of the operation was not attained, namely, division of the sympathetic trunk, the results were fairly satisfactory. The intense pain was relieved and the patient had been able to begin using the hand, which had been impossible before. Dr. Hoets suggested that the manipulations and pressure from packing did something to interrupt the disordered sympathetic function.

Lorenz Osteotomy.

Dr. Hoets then showed a female patient, aged forty-eight years, who two years earlier had sustained an intracapsular fracture of the femoral neck. Treatment by weight extension resulted in non-union, with absorption of the neck; six months later subtrochanteric osteotomy by the method of Lorenz was carried out. The patient's limb was then kept in a plaster spica for two months. Six months after operation she had returned to work, and had continued ever since, growing more active all the time. Her limb was two inches short and she wore a surgical boot; hip movements were painless, and although not of full range, they allowed of her going up and down stairs normally, pulling on stockings without difficulty, and sitting cross-legged *et cetera*. X ray examination revealed sound bony union, both at the site of bifurcation and between the head and the trochanter. The consistency and contour of the head and the "joint space" shown in the skiagram demonstrated that the head was completely vascularized.

Another patient shown by Dr. Hoets, a female, aged fifty-five years, had reached the limit of endurance of pain from monarticular arthritis of the left hip, and six months prior to the meeting she had submitted to petrochanteric osteotomy by the method of Lorenz. After a stormy convalescence due to mental derangement she had lost her pain, and although still using a crutch could walk with reasonable comfort.

Ununited Fracture Treated by Bone Grafting.

Dr. Hoets finally showed a male patient who had been admitted to hospital for non-union of a fracture of the middle third of the humerus with complete radial palsy. At operation the bone was found to be almost of egg-shell thickness and strength, and the proposed heavy lay-on graft was abandoned; an intramedullary thinner graft from the tibia was used, without great hopes of success. This, however, was so successful that three months after operation a fall had resulted in a supracondylar fracture without disturbance of the new union at the graft. Subsequently transplantation of the flexor tendons of the wrist to the common extensors of the fingers was performed. At the time of the meeting movement was just beginning under control; the hand was still in a splint.

Radiographic Films.

Dr. J. G. EDWARDS and Dr. H. M. CUTLER showed a series of films depicting ulcers of the stomach and duodenum in various parts of those organs. One film showed a calcified gland outside the gastric area, which simulated an ulcer niche. Among other film was one showing a gastro-colic fistula due to carcinoma involving both organs. The rapid advance of *osteitis deformans* following fracture of the femur was demonstrated in other films. A rapidly advancing carcinoma of the humerus, extensive calcification of the pleura and malignant disease of the lung were also shown in skiagrams.

Dr. D. G. MAITLAND showed a series of X ray films demonstrating the normal radiographic appearances found by excretion pyelography at various stages of pregnancy, and as a contrast films from several pathological cases. He also showed a series of films from one case, demonstrating syphilitic aortitis, a large gumma of the distal end of the right humerus and a second gumma involving the twelfth thoracic vertebral body; the radiographic resemblance between this gumma and an osteogenic sarcoma and secondary metastasis in the spine was shown. Further films showed the great decrease in the bone lesions shortly after the commencement of antisyphilitic treatment. Dr. Maitland in conclusion showed a film illustrating free gas in the abdomen following perforation of a duodenal ulcer.

A MEETING of the New South Wales Branch of the British Medical Association was held at Saint Vincent's Hospital, Sydney, on October 20, 1939. The meeting took the form of a number of clinical demonstrations by members of the honorary staff of the hospital.

Osteogenic Sarcoma of the Thigh.

Dr. V. M. COPPLESON's first patient was a young girl, aged fifteen years, who one month before her admission to hospital on May 21, 1939, had complained of aching above the right knee, which was worse during the night. One week before admission to hospital she began to limp and a swelling was noticed on the medial aspect of the right femur.

On examination a swelling was seen on the antero-medial aspect of the right femur, just above the condyle, measuring about ten centimetres by five centimetres; it was attached to the bone deep to the muscles, to which it was also attached. There was no reaction to the Wassermann test and no leucocytosis was present. The radiographic diagnosis was osteogenic sarcoma.

At operation a tourniquet was tightly applied above the growth, an immediate section was taken and the diagnosis of osteogenic sarcoma was confirmed by Dr. A. H. Tebbutt. After discussion with Dr. Tebbutt and Dr. de Monchaux, who considered the lesion from the aspect of treatment by deep X ray therapy, it was decided to disarticulate the limb at the hip joint without removal of the tourniquet. Dr. Coppleson said that a recent skiagram showed a suspicious area in the right lung.

During a recent visit to the United States of America Dr. Coppleson had registered this case with the Bone Sarcoma Registry of the American College of Surgeons. Dr. Crowell, who examined the data supplied and the sections, concurred in the diagnosis and the treatment carried out. Dr. Coppleson said that he had seen a similar case in the United States of America, in which a solitary and definite secondary growth in the lung had occurred, for which lobectomy had been performed.

Tic Douloureux Treated by Partial Section of the Fifth Nerve.

Dr. Coppleson then showed two patients who had been operated upon for *tic douloureux*. In each case the second and third divisions of the fifth nerve only had been involved, and the operation consisted of division of the lower two-thirds of the posterior root of the nerve, through the middle fossa. The ophthalmic fibres and motor root were left intact. The presence of the conjunctival reflex and the areas of anaesthesia of the face were shown. One patient suffered from a facial paralysis on the same side following the operation on March 9, 1939. This was due to stretching of the great superficial petrosal nerve during the process of elevation of the dura on the floor of the middle fossa, which pulled on the geniculate ganglion as it lay in the facial canal and caused edema of the nerve and facial paralysis. The paralysis had completely recovered. Both patients had been free from pain since the operation.

Local Resection of the Rectum for Simple Stricture.

Dr. Coppleson then showed a male patient, aged forty-nine years, who had complained of pain on defaecation and said that his motions were about the size of a peanut. He attributed all his symptoms to an enema he had been given elsewhere six months previously. Sigmoidoscopic examination revealed a constriction of the rectum, situated centrally just below the recto-sigmoidal junction; the opening was about the size of a small pencil and the edges appeared regular, but bled easily. On October 20, 1938, a left rectus colostomy was performed, and no evidence of any malignant condition was found on examination of the abdomen. The patient refused any further treatment and was discharged. He returned on January 24, 1939, and further sigmoidoscopic examination revealed no change. An operation was performed on February 2, 1939, and the rectum was exposed by perineal incision. No evidence of any growth or stricture could be found from this aspect. A sigmoidoscope was then passed to the site of stricture, and with this in place dissection revealed the constricted area, which was hidden by tissue passing across the stricture. This was excised and an end-to-end anastomosis was made. This was somewhat difficult, owing to the upper segment of bowel being funnel-shaped. The colostomy was later closed, and since then the patient had no further trouble.

Lymphangioma of the Neck.

Dr. Coppleson finally showed a female patient, aged forty-one years, who had had a large lymphangioma excised from the right supraclavicular region. Sections of this were shown. After the operation a course of deep X ray therapy was given.

Dr. Coppleson also showed a specimen of a similar growth which had been removed from a man in the corresponding situation on the left side.

Ulcers due to Lack of Vitamin A.

DAME CONSTANCE D'ARCY showed a married woman, aged thirty-two years, who, during the preceding ten years, had suffered from recurrent ulcers in the mouth; during the past eight years she had had only a few weeks' freedom from ulcers. Four years previously, on two separate occasions, she had a small ulcer in the vagina; in each case the ulcer healed spontaneously. In April, 1939, the patient had a profuse discharge *per vaginam*, and about three weeks later she noticed painful ulcers in the vagina. She received treatment at the Orange Base Hospital with argyrol, silver nitrate and douches. There was no reaction to the Wassermann test. Attempts at culture were made from smears from the vagina and the mouth, and the oral ulcers on one occasion yielded a growth of Vincent's organisms. The ulcers diminished, but the patient had to discontinue the treatment owing to her removal from the district in May, 1939.

On August 15, 1939, the patient attended the out-patient department at the Rachel Forster Hospital. She had one large ulcer, two inches in length, one inch wide and half an inch deep, on the right side of the posterior vaginal wall; the ulcer had a grey slough at the base and yielded a free serous discharge. Extensive scarring from previous ulceration was noticed on the posterior part of the left labium; the inguinal glands were not enlarged. One ulcer was present in the mouth. Investigation revealed that the patient's diet consisted of bread, butter, cheese, meat and potatoes, but no fruit or green vegetables. She acknowledged that she had become accustomed to eating very little because she had five children and her husband had been on relief work for years. Cod liver oil was given by mouth and was also used as a daily dressing for the ulcer; in addition, the patient was given "Vibex" both by mouth and by intramuscular injection. Her condition improved until the next menstrual period, when the local treatment was suspended.

A blood count made on August 23 gave the following information. The erythrocytes numbered 3,730,000 per cubic millimetre, the hæmoglobin value was 56% and the colour index was 0.75 (7.84 grammes). The leucocytes numbered 10,000 per cubic millimetre; 61% were poly-

morphonuclear cells, 28% were lymphocytes, 8% were monocytes, and 3% were eosinophile cells. There was no significant evidence of anisocytosis, poikilocytosis, nucleated erythrocytes or abnormal staining reactions. The pathologist reported the presence of normocytic normochromic anaemia. On August 25 the total amount of ascorbic acid excreted in twenty-four hours was estimated to be 10.9 milligrammes; the normal amount was 13 to 15 milligrammes. The total amount of urine excreted in the twenty-four hours was 910 cubic centimetres.

On September 7, 1939, two small ulcers appeared on the perineum. On September 9 the ulceration had extended rapidly and the patient was admitted to hospital. Progressive ulceration was present on the posterior and lateral aspects of the vagina, extending high on the posterior vaginal wall. An offensive discharge from above the visible edge of the ulcer suggested that there were other ulcers yet higher. The patient's temperature on her admission to hospital was 98.6° F. and her pulse rate was 86. Her evening temperature for four days after her admission was as high as 100° F.; the pulse rate never rose above 90 per minute.

On September 13 examination by means of a test meal disclosed hypochlorhydria; the patient was given dilute hydrochloric acid by mouth. A blood count gave the following information. The erythrocytes numbered 4,160,000 per cubic millimetre, the hæmoglobin value was 56%, and the colour index was 0.69 (7.84 grammes). The leucocytes numbered 10,000 per cubic millimetre; 71% were polymorphonuclear cells, 22% were lymphocytes, 4% were monocytes and 3% were eosinophile cells. There was no evidence of anisocytosis, poikilocytosis, nucleated erythrocytes or abnormal staining reactions. The patient was given four "Adexol" capsules three times a day, and cod liver oil and iron by mouth; she was also given an intramuscular injection of "Redoxon Forte" (vitamin C) once a day for eighteen days. She received a full diet, with plenty of fruit and green vegetables. The local treatment consisted of the application of a 20% solution of argyrol and "Dettol" douches. On September 18 the local condition had improved.

On September 20 pus cells and a few organisms, small Gram-positive bacilli (possibly non-pathogenic) were found in a smear from an ulcer in the mouth; there were no spirochaetes. In a smear from the vaginal ulcers numerous pus cells were found, together with scanty Gram-negative cocciform bacilli, scanty Gram-positive cocci, generally occurring in pairs, and scanty Gram-positive bacilli, possibly non-pathogenic. On September 29 a blood count gave the following information. The erythrocytes numbered 4,390,000 per cubic millimetre, the hæmoglobin value was 56% and the colour index was 0.66 (7.84 grammes). The leucocytes numbered 9,950 per cubic millimetre, and toxic granules were present. Of the leucocytes, 61% were polymorphonuclear, 30% were lymphocytes, 7% were monocytes and 2% were eosinophile cells. There was no significant evidence of anisocytosis, poikilocytosis, nucleated erythrocytes or abnormal staining reactions. The local condition continued to improve rapidly.

On October 12 a blood count gave the following information. The erythrocytes numbered 4,070,000 per cubic millimetre, the hæmoglobin value was 56% and the colour index was 0.7 (7.8 grammes). The leucocytes numbered 9,550 per cubic millimetre; 58% were polymorphonuclear cells, 31% were lymphocytes, 6% were monocytes and 5% were eosinophile cells. There was no evidence of anisocytosis, poikilocytosis, nucleated erythrocytes or abnormal staining reactions. The dosage of iron was increased. The honorary ophthalmologist expressed the opinion that the patient had not had evidence or symptoms of night blindness, a condition said to occur in cases of vitamin A deficiency.

Dame Constance D'Arcy said that deficiency of vitamin A was known to cause ulceration at mucous edges. Professor Gerrard, of Manchester, had published the report of a case similar to that under discussion in *The Journal of Obstetrics and Gynaecology of the British Empire* of August, 1938. He had tried several treatments, including diathermy, and had made an attempt to limit the progress of the ulcer by cutting it with the thermal needle, all to no avail;

but the condition yielded to massive doses of vitamin A. Professor Gerrard's patient was pregnant and was delivered safely. Dame Constance said that her patient might have an early pregnancy. No hormonal tests had been made, because of the risk to the patient's bladder if a catheter was used. Moreover, if no catheter was used, urine passed over the ulcers would almost certainly have killed the mice or other animals used in the test.

Lesions Treated by Physical Therapy.

DAME CONSTANCE D'ARCY, in conjunction with Dr. C. DE MONCHAUX and Dr. N. FARRAR, showed an unmarried female patient, aged twenty-two years. On her admission to the Royal Hospital for Women in 1937 her uterus was hard, smooth, mobile and enlarged to the level of the umbilicus. On March 12, 1937, Dame Constance D'Arcy performed subtotal hysterectomy and double oophorectomy. The pathologist reported myxomatous degeneration with cystic formation; in the uterus there were cellular changes suggestive of sarcoma. The patient was later given X ray therapy; she received 1,000 r, given in doses of 200 r daily, to three anterior pelvic ports; the dose was filtered through one millimetre of copper and one millimetre of aluminium; the kilovoltage was 200 and the milliamperage was 20. In January, 1938, the patient was given a similar course.

On May 30, 1938, a vaginal examination was made; a mass about the size of a hen's egg was palpable to the right of the mid-line anteriorly, and a smaller mass was palpable on the left side. In June, 1938, she was given a total of 1,400 r to each of three ports, with the same factors as before. On August 8, 1938, nothing abnormal was palpable. On November 7 a further vaginal examination was made, and two small nodules were palpated low down in the left side of the pelvis. On November 8 a further course of X ray therapy was begun; the patient received a total of 1,800 r to three pelvic ports, with the same factors as before. On August 14, 1939, nothing abnormal could be palpated.

Dame Constance D'Arcy, Dr. de Monchaux and Dr. Farrar also showed a married woman, aged fifty-two years, who on May 3, 1938, had been found to have an ulcer of the urethra, with infiltration of the anterior vaginal wall for about one inch. A mass, about the size of a small marble, was bulging into the vagina. The patient was given X ray therapy direct to the vulva with the following factors: 0.5 millimetre of copper and 1.0 millimetre of aluminium were used for filtering, the kilovoltage was 200 and the milliamperage was 20, and daily doses of 200 r were given, the total dosage being 1,800 r. A further course of X ray therapy was begun on July 5; 200 r were given daily to each of three ports, the right and left inguinal region and the vulva, 1,200 r in all being given; one millimetre of copper and one millimetre of aluminium were used for filtering, and the other factors were the same as before.

On September 20 an operation was performed for the interstitial insertion of radium needles. Six two-milligramme needles and two one-milligramme needles were inserted, the total of 14 milligrammes being left in position for six days. The total dose of radium was 2,016 milligramme-hours. On February 20, 1939, there was a recurrence of the growth in the urethral region. On February 27 X ray therapy was begun, the total dose being 3,375 r. On May 29, 1939, no growth was palpable.

Dame Constance D'Arcy, Dr. de Monchaux and Dr. Farrar then showed a married woman, aged sixty-one years, who, on April 24, 1939, had been found to have a fungating growth at the entrance to the urethra, extending laterally onto the anterior vaginal wall and upwards along the vagina. On May 16 an operation was performed for the interstitial insertion of radium needles. Five two-milligramme needles and six one-milligramme needles were inserted. In addition, two ten-milligramme tubes were placed in the vagina. The total amount of radium dosage was 3,600 milligramme-hours. The pathologist reported that the lesion was a columnar-cell adenocarcinoma; the primary growth was probably of paraurethral origin. By July 24 the growth had considerably regressed, but there was a slight residuum. On August 31 a course of X ray

therapy was begun. A total of 2,000 r was given, filtered through 0.5 millimetre of copper and 1.0 millimetre of aluminium, 250 r being given three times a week direct to the urethral lesion; the kilovoltage was 180 and the milliamperage was 10.

Dr. de Monchaux and Dr. Farrar then showed radiographs from three cases, illustrating regeneration of bone induced in certain neoplastic conditions by irradiation, with consequent improvement in the local condition.

The first case was one of either sarcoma or secondary carcinoma involving the right side of the mandible, with much bony destruction. The patient was a male, aged sixty years. He had first been seen at Saint Vincent's Hospital in March, 1933. A course of X ray therapy was given from March 17 to May 8, 1933; 200 kilovolts were used, and a total dose of 2,700 r was given, measured on the skin. One course only of irradiation was given. Radiographs taken on April 5, 1935, revealed much improvement; new bone formation was seen. On October 3, 1939, examination revealed no abnormality, and the patient's condition was satisfactory. Radiographs revealed considerable improvement, with much regeneration of bone and good definition of bony outlines. The patient had been under observation for six and a half years.

The next case was that of a male patient, aged sixty-seven years. He had first been seen in May, 1938, when he had a painless swelling in the region of the left jaw; it had been present for four months. Radiographs revealed extensive destruction of the mandible on the left side, above the angle. The pathologist reported that the lesion was probably a malignant neoplasm, almost certainly a sarcoma.

The patient was given courses of X ray therapy to the lesion from May 24 to June 7, 1938, and again from July 23 to August 8, 1938, 200 kilovolts being used. Radiographs taken on August 6, 1938, revealed little change; the bony margins were perhaps rather more sharply defined. On October 12, 1938, further radiographs were taken; they revealed a little more definition of bony outlines, with some new bone formation. From October 13 to October 24, 1938, a third course of X ray therapy was given. Further radiographic examinations were made on February 3, 1939, and on June 8, 1939; the patient's condition, both local and general, was satisfactory. The radiographs suggested that the condition was stationary, and revealed great improvement as compared with the original films taken in May, 1938. There was evidence of bony regeneration. The patient had been under observation for a period of thirteen months.

Dr. de Monchaux and Dr. Farrar finally showed radiographs from a case of carcinoma of the breast. The patient, aged thirty-nine years, had first been seen by Dr. de Monchaux and Dr. Farrar in January, 1938. She had undergone, in November, 1937, an operation for simple mastectomy of the left breast. The pathologist had reported that the lesion was a scirrhous carcinoma.

The patient was given X ray therapy to the left pectoral and axillary regions from January 25 to February 22, 1938, and again from May 10 to May 31, 1938. Radiographs of the pelvis taken on February 1, 1938, gave no indication of bony metastases; but as the patient complained of lumbo-sacral pain in May, 1938, more radiographs were taken. These gave suggestive evidence of early erosion of the sacrum, about the middle and lower segments. X ray therapy to the sacral region was begun on May 17, and the patient was given another course to the sacrum in August. Radiographs taken subsequently revealed improvement in the condition of the sacrum and no evidence of metastatic deposits; the last radiographs were taken in August, 1939. When the patient was seen in August her clinical condition was satisfactory. The patient had been under observation for a period of nineteen months.

Combined Lesions of the Spinal Cord and Peripheral Nerves.

Dr. R. JEREMY showed a male patient, aged forty-nine years, who had suffered from progressive weakness in his arms and legs for two years, from unsteadiness in walking

for six months, and from severe momentary stabbing pains in his legs for three months. He had suffered from a hæmatemesis three years before.

On examination he was obviously pale. The erythrocytes numbered 2,600,000 per cubic millimetre, the hæmoglobin value was 35%, and the colour index was 0.67. The mean corpuscular volume was 69 cubic μ . The leucocytes numbered 11,200 per cubic millimetre, 67% being neutrophilic cells. An X ray examination of the patient's stomach and duodenum revealed a filling defect on the greater curvature; and occult blood was present in the faeces. When the nervous system was examined the patient was obviously suffering from severe momentary pains in the legs. His pupils were equal and reacted sluggishly to light and freely to accommodation; a fine nystagmus was present on lateral movement of the eyes. *Synchysis scintillans* was observed in the right eye; there was paresis of the right twelfth nerve. The muscle reflexes were very weak in both arms; the knee and ankle reflexes were absent. General muscular wasting and weakness were present; the latter was not pronounced. The lower abdominal reflexes were weak, the upper reflexes normal. The plantar responses were extensor in type. There was some hypoaesthesia to pin prick on the arms and hands and on the feet and legs; there was also some impairment of the response to heat and cold in the same areas. The response to light touch was not impaired. The vibration sense in the left leg was diminished. On lumbar puncture the response to the Queckenstedt test was normal. The Wassermann test elicited no reaction when applied to the cerebro-spinal fluid. The cellular content and protein and globulin values of the fluid and the response to the colloidal gold test were normal. The stomach contained no free hydrochloric acid. The patient's blood did not react to the Wassermann test. An X ray examination of the spine revealed collapse of the body of the twelfth thoracic vertebra, due to an injury sustained four and a half years before. This finding was considered to be unrelated to the findings in the nervous system.

It was suggested that the patient was suffering from combined lesions of the spinal cord and peripheral nerves conditioned by a defect of gastric secretion, which had prevented proper absorption of the vitamin B complex, and that the hypochromic microcytic anaemia was either post-hæmorrhagic or an iron-deficiency anaemia conditioned by the gastric secretory defect. The lesions in the nervous system closely resembled those found in subacute combined degeneration of the spinal cord; and in this case they were associated with a hypochromic microcytic anaemia instead of the more commonly found macrocytic anaemia. Treatment had been by the use of large doses of iron and dilute hydrochloric acid; thiamin chloride had been given parenterally. The blood had been restored almost to normal, the lightning pains in the legs had almost disappeared and the vibration sense in the left leg had shown improvement.

Radiological Exhibits.

DR. D. G. MAITLAND showed a series of X ray lantern slides demonstrating hydatid disease in the lungs and congenital heart disease. He showed others illustrating miliary tuberculosis, miliary carcinosis and silicosis, and showing how closely these three conditions might resemble one another from a radiological point of view. Dr. Maitland also showed a series of films of varied radiographic appearances found in the lungs from cases all of which had been associated with the presence of tubercle bacilli in the sputum. Dr. Maitland finally showed a series of lantern slides illustrating the method used in pelvcephalometry, and another series illustrating gastrointestinal, renal and gall-bladder disturbances.

DR. ALAN OXENHAM showed a series of skiagrams demonstrating some congenital abnormalities and bone diseases, including three cases of hydatid disease of the bony pelvis and several cases of Perthes's disease in its early, advanced and healed stages. He also showed skiagrams of a large calcification in the subdeltoid bursa, which had been completely absorbed after five weeks' short-wave therapy.

Fibrosarcoma of the Uterus.

DR. DONOVAN FOY described a case of fibrosarcoma of the uterus, in which surgical treatment had been adopted. He showed the tumour and microscopic slides.

Sterility.

Dr. Foy also showed utero-salpingographs used in the diagnosis and treatment of sterility, together with the necessary equipment. He gave a description of the technique followed out in the course of such investigations.

(To be continued.)

VICTORIAN BRANCH NEWS.

THE following judgement of the Workers' Compensation Board of Victoria regarding the agreement Bowes and Photogravures Proprietary Limited is published at the request of the Council of the Victorian Branch of the British Medical Association for the information of members.

The Agreement Bowes and Photogravures Proprietary Limited.

The amount of compensation payable to Bowes under the Fourth Schedule depends upon the proper constructions of those parts of the Schedule relating to the loss of fingers and joints of fingers and the nature and extent of the injury to his right forefinger suffered by Bowes.

It was no doubt intended by Parliament that the Schedule should assess in language free from ambiguity the amounts of compensation which should be paid to a worker for certain specified injuries caused to him by accident arising out of and in the course of his employment. Whether the Schedule does so may be open to question.

The interpretation which has been placed upon the provisions of the Workmen's Compensation Acts in England serves as a guide to the interpretation of the Fourth Schedule in the Victorian Acts.

In *Hoddinott v Newton Chambers & Co. Ltd.* 1901 A.C. 49 at 57 Lord Macnaghten said: "the only way to construe the Act is read it fairly, taking the words in their common and ordinary signification".

In *Brintons v Turvey* 1905 A.C. 230 at pp. 232-3 Lord Halsbury L.C. said: "The language of the statute we are called upon to construe must be interpreted in its ordinary and popular meaning" and in *Smith v Coles* 1905 2 K.B. 827 at 830-1 Romer L.J. said: "It ought to be remembered that the Workmen's Compensation Acts are expressed not in technical but in popular language, and ought to be construed not in a technical but in a popular sense."

Having regard to the construction which, in our opinion, ought to be placed upon the Fourth Schedule, it is, we think, proper to adopt a meaning of the words used in the Schedule which expresses what may be described as their ordinary popular meaning.

Accordingly the word "finger" where it appears in the Schedule should be given its ordinary popular meaning and not the meaning it has to an anatomist. Anatomically, a finger (not being a thumb) would include the three phalanges which are united to the metacarpal bones and also the metacarpo-phalangeal joint. The anatomical meaning of the word "finger" is not what the ordinary popular meaning of the word. The word has been defined as meaning one of the terminal members of the hand and also as one of the terminal parts of the hand, and we consider that the word "finger" should be construed as meaning what to outward appearance may be described as a digit or terminal division of the hand. In this meaning, it ought not to be deemed to include the metacarpo-phalangeal joint.

Where this terminal part of the hand or digit has been lost there is we think a total loss of a finger within the meaning of the Fourth Schedule.

It may also be said that there is a loss of a finger where there has been a loss of the finger for all practical purposes; where the finger has been so far lost that it cannot fulfil its natural and normal functions to any appreciable degree in any employment for which the worker is fitted or adapted.

In *Johnston v N.Z. Shipping Co. Ltd.* 1917 G.L.R. 27, a case dealing with a somewhat similar schedule under the New Zealand Act, it was considered that while it was necessary to show that substantially all of the portion of the finger designated had been lost, it was not necessary in order to establish the loss of a joint that every particle of the joint should be lost, and in this case a decision was given in favour of the worker where he had lost "practically the whole of the first joint".

Upon an examination of Bowes' right forefinger it appears that the finger was removed at the crease on the palmar surface of the finger near the junction of the finger and the hand. According to the medical evidence there remains of the proximal phalanx one-third of an inch or less, and it also appears from this evidence that the metacarpo-phalangeal joint is intact and capable of movement and that the tendons remain fixed to what is left of the proximal phalanx. Though anatomically the crease at which the finger was removed is considerably below the metacarpo-phalangeal joint we conclude as a fact that the finger in the meaning we attach to the word has been lost.

While the metacarpo-phalangeal joint has a flex to a right angle and there is some slight grip left these considerations cannot in our opinion compel us to conclude that the forefinger has not been lost.

Even if the anatomical meaning be given to the word "finger" where it appears in the Fourth Schedule and anatomically there has not been a complete loss of the finger, we consider that the function which the finger can fulfil is so infinitely small and negligible as to justify the conclusion that there has been for all practical purposes the permanent total loss of the use of the finger.

Medical Societies.

THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A MEETING of the Medical Sciences Club of South Australia was held at the University of Adelaide on September 1, 1939.

Pollen in the Atmosphere.

MR. F. V. MERCER, from the department of botany, University of Adelaide, presented a paper on "Atmospheric Pollen in the City of Adelaide and Environs". The paper dealt with a survey of atmospheric pollen carried out at Adelaide between August 1, 1938, and July 31, 1939. The pollen cycle was traced and the percentages of the various pollen species were shown. Mr. Mercer pointed out that a small fraction (9% to 19%) of the total pollen remained to be identified. An important feature seen was the absence of pollen from indigenous species, because approximately 90% of the grains identified were produced from introduced plants. The gardens and large areas of waste land in the city and suburbs formed the chief regions for the production of the pollen recorded. A study of the pollen species which invaded the air from week to week in any region yielded information regarding its hay fever potentialities.

A MEETING of the Medical Sciences Club of South Australia was held at the University of Adelaide on October 6, 1939.

Population Research.

MR. J. A. LANAUZE, from the department of economics, University of Adelaide, presented a paper on "Some Aspects of Population Research". He stated that the prospects for population growth among European peoples need, or should need, little discussion in a medical audience. Fertility had been falling in western European countries (including the United States of America, Australia *et cetera*) for at least two generations; in other European countries for at least a generation. It was now at such a level that no further decrease of mortality could prevent population decline in most European countries. These trends raised economic, social and political problems of the gravest importance; yet there was almost complete ignorance of the answers to many fundamental questions relating to the decline in fertility. The factual material on which answers must be based was such that much of it could be collected only by, or with the close cooperation of, medical men and women.

Thus it was impossible to speak with any confidence about such factors as (a) the prevalence of contraceptive effort, (b) its efficacy, (c) its effect, if any, upon subsequent fertility, (d) the prevalence of abortion and its effects upon subsequent fertility, and so on. Many students could guess at these things, but no one could speak with confidence until sample inquiries, large enough to be statistically significant, and covering different groups of the population, had been made.

There had been various inquiries concerned with such questions, but none so far was entirely satisfactory. The Population Investigation Committee hoped to initiate a large-scale inquiry in England this year, improving upon that controlled by Raymond Pearl among 130 hospitals in the United States of America. Until reliable information was available about sexual habits and practices, it was not even possible to say with confidence how far the fall in fertility was a direct result of voluntary action.

It had been shown that where people had confidence in the investigator's purpose, information of the kind required was readily obtainable. Cooperation between medical men, economists and statisticians was essential if it was to be possible even to begin to understand the "population problem", much less to solve it. In the past, however, this cooperation had not been strikingly evident.

Salicylates and Virus Nucleoprotein.

MR. R. J. BEST, of the Waite Institute, in a paper on "Some Effects of Salicylates on a Virus Nucleoprotein", stated that tobacco mosaic virus was a nucleoprotein which might be readily obtained in a pure state without its infective powers being destroyed. Aqueous solutions of the pure active virus at a concentration of the order of that of the juice expressed from diseased plants (0.2%), when adjusted to pH7, formed stable colloidal sols, showed stream double refraction when disturbed, and remained infective for years.

The addition of electrolytes to these sols resulted in an aggregation of the virus particles, leading eventually to precipitation. There was a critical concentration at which this occurred for each electrolyte, and for salts like potassium and sodium chlorides was about half molar. Virus precipitated by univalent salts was in the form of paracrystalline fibres, which might be redispersed to give clear sols by shaking or by dilution. The virus was still fully infective.

Salicylates and allied salts, however, behaved very differently. The virus was precipitated from solution at a salicylate concentration comparable with that observed for other salts, but the precipitated virus occurred in the form of amorphous aggregates of insoluble denatured protein which was no longer infective.

It was suggested that the action of salicylic acid ointment on warts (caused by a virus) might in part be due to an action of the salicylate ion on the virus. It was further suggested as a matter of pure speculation that it might be worth while to examine certain other physiological effects of salicylates from the point of view of a possible connexion with their action on nucleoproteins.

Medical Practice.

THE AUSTRALIAN AERIAL MEDICAL SERVICES.

THE third annual meeting of the Federal Council of the Australian Aerial Medical Services was held in Melbourne on February 27, 1940, Dr. George Bell, the President, in the chair.

The meeting was attended by representatives of the Queensland, New South Wales, Victorian, South Australian, Eastern Goldfields and Western Australian Sections, which control the flying doctor bases at Cloncurry, Broken Hill, Wyndham, Alice Springs, Kalgoorlie and Port Hedland, respectively. The Right Reverend John Flynn, O.B.E., and Reverend A. S. Houston, associate councillors, were also present.

Dr. George Bell (New South Wales Section) was reelected President.

It was noted that the total maintenance expenditure of the six bases for the year ending June 30, 1940, would be approximately £20,000. In addition, certain sections are faced with some capital expenditure. The allocation of the Federal Government subsidy for the year (£7,500) and the H. V. McKay Charitable Trust donations of £1,000 each for 1939 and 1940 was considered and divided between the bases, as follows: Cloncurry, £2,232; Wyndham, £1,165; Port Hedland, £1,919; Kalgoorlie, £1,440; Broken Hill, £1,424; Alice Springs, £1,320.

This being the first meeting since the incorporation of the Queensland Section, the delegates from Brisbane were welcomed by the President.

In view of the recent transfer of the Cloncurry Base and the establishment of the Alice Springs Base, the following resolution was adopted:

Aerial Medical Services aided by wireless for the inland of Australia were started at Cloncurry, Queensland by the Australian Inland Mission. This body had two ultimate objectives: firstly, to provide sufficient bases to supply aid throughout all areas, and secondly, that the service should be organized and controlled on a national basis. The establishment of the base at Alice Springs and the transfer of the Cloncurry Base by the A.I.M. to the Queensland Section of A.A.M.S. complete the fulfilment of both objectives. Federal Council of A.A.M.S. at its seventh session congratulates the A.I.M. and Associate Councillor Right Rev. John Flynn on this occasion. Gratitude is also expressed to the General Assembly of the Presbyterian Church for its generous cooperation regarding Cloncurry.

The wireless system (the six base wireless stations with the pedal wireless sets at the outlying centres) plays an important part in the Flying Doctor services, and many matters dealing with wireless were discussed. From the return submitted by the Postmaster-General's Department it was noted that whereas on June 30, 1938, there were 116 outposts communicating with four flying doctor bases, there are now 138 linked with the six bases.

It was reported that for the twelve months ended 30th June, 1939, 92,486 miles were flown by aerial ambulances and 37,554 commercial telegrams were transmitted from and to pedal outposts through base stations. The mileage for six months to December 31 was 45,500, the telegram traffic being 20,957.

With regard to medical flights, it is the practice at the bases to make flights whenever necessary, irrespective of the financial position of the patient, and whether white or black. The majority of flights might cost at least £20 or £30, perhaps more. In very few cases can the full cost of the flight be met; but the view was expressed that wherever possible patients should be given the opportunity of making some donation in return for service rendered.

Those present received with gratitude the report that a citizen of Melbourne had announced his intention of bequeathing one-fourth of his residuary estate to the Federal Council of the Australian Aerial Medical Services. It was considered that when testators desired to assist all bases the legacy should be to the Federal Council of Australian Aerial Medical Services. This might also apply to donors of large amounts.

Naval, Military and Air Force.

THE SECOND AUSTRALIAN IMPERIAL FORCE.

THE following statement is published at the instance of the Director-General of Medical Services.

Following the announcement of the formation of the Seventh Division, Second Australian Imperial Force, for service overseas, it is necessary to make further appointments to the Medical Services of the Australian Imperial Force. Medical officers are required for:

1 General hospital (1,200 beds)	..	31 medical officers
1 General hospital (600 beds)	..	19 medical officers
1 Casualty clearing station	..	8 medical officers
4 Field ambulances	..	36 medical officers
1 Motor ambulance convoy	..	2 medical officers
2 Field hygiene sections	..	2 medical officers
1 Mobile bacteriological laboratory	..	1 medical officer
Regimental medical officers	..	20

The total number of medical officers required is approximately 133. Of these, specialist appointments account for 43, made up as follows: surgeons, 17; physicians, 11; radiologists, 5; pathologists, 3; otologists, 2; anaesthetists, 3; ophthalmologists, 2. Many applications for service overseas have been made, but some vacancies still exist.

It is confidently expected that the medical profession will respond in sufficient numbers. A special appeal is made to the younger members of the profession to apply for appointment.

Those medical practitioners who submitted their names for service overseas with the Sixth Division will be considered available for future appointments unless word is received from them to the contrary.

Vacancies also exist for medical officers to serve with the Royal Australian Air Force.

Application for enlistment with the Australian Army Medical Corps and the Royal Australian Air Force for service at home or abroad should be made to the Deputy Director of Medical Services of each military district.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 41, of February 29, 1940.

THE SECOND AUSTRALIAN IMPERIAL FORCE.

Australian Army Medical Corps.

To be Captain—Captain J. S. Peters, Australian Army Medical Corps, 3rd Military District, 1st January, 1940.

AUSTRALIAN MILITARY FORCES.

NORTHERN COMMAND.

First Military District.

Australian Army Medical Corps Reserve.

To be *Honorary Captain*—John Louis Groom, 5th December, 1939. To be *Honorary Lieutenant*—James Joseph Lander, 3rd February, 1940.

EASTERN COMMAND.

Second Military District.

Australian Army Medical Corps.

Lieutenant-Colonel J. Leah relinquishes the command of the 1st Field Ambulance, 31st January, 1940, and is transferred to the Reserve of Officers (A.A.M.C.), 1st February, 1940. Captain M. R. Joseph is transferred to the Reserve of Officers (A.A.M.C.), 18th December, 1939. Captain E. V. Bradfield is placed upon the Retired List with permission to retain his rank and wear the prescribed uniform, 1st January, 1940.

SOUTHERN COMMAND.

Third Military District.

Second Cavalry Division: Staff.

Lieutenant-Colonel C. W. Adey, E.D., Australian Army Medical Corps, is appointed Assistant Director of Medical Services, and is granted the temporary rank of Colonel, 3rd January, 1940, *vice* Lieutenant-Colonel (Temporary Colonel) H. C. Disher, seconded to the 2nd Australian Imperial Force.

Australian Army Medical Corps.

To be Captain (provisionally), supernumerary to establishment pending absorption—Montagu Owen Kent Hughes, 23rd January, 1940.

Australian Army Medical Corps Reserve.

To be Major—Mark Gardner, 23rd January, 1940. To be Honorary Captains—Kenneth Bain Alexander and Gavan Donoghue, 23rd January, 1940, and 8th February, 1940, respectively.

Fourth Military District.

Command Headquarters: Staff.

Lieutenant-Colonel F. H. Beare, E.D., Australian Army Medical Corps, is appointed Deputy Director of Medical Services and is granted the rank of Temporary Colonel, 27th November, 1939, *vice* Captain S. R. Burston, C.B.E., D.S.O., V.D., seconded to the 2nd A.I.F.

Australian Army Medical Corps.

Captain (provisionally) C. Swan is transferred to the Reserve of Officers (A.A.M.C.), and to be Honorary Captain, 6th February, 1940.

Australian Army Medical Corps Reserve.

To be Honorary Captains—Reginald Hewgill Hamilton, 22nd December, 1939; Robert Abraham Isenstein, 3rd January, 1940; John Clive Sangster, 9th January, 1940; and John Michael Morphet Gunson, 11th January, 1940. To be Honorary Lieutenant—Allan John Bloomfield, 21st December, 1939.

WESTERN COMMAND.

Fifth Military District.

Australian Army Medical Corps Reserve.

To be Honorary Captains—Max. Mayrhofer and John Cyril Bennett, 25th January, 1940, and 6th February, 1940, respectively.

Proceedings of the Australian Medical Boards.

SOUTH AUSTRALIA.

DR. ARTHUR KYLE GAULT appeared before the Medical Board of South Australia on January 25, 1940, to defend a charge of infamous conduct in a professional respect

within the meaning of the *Medical Practitioners Act* of 1919-1935, Section 26, d, the particulars of which were as follows:

1. On August 10, 1939, for signing a certificate of the cause of death of Gweneth Patricia Harris, which was false to his knowledge.

2. By means of such certificate having endeavoured to conceal: (a) that the said Gweneth Patricia Harris was pregnant; (b) that an attempt had been made prior to her death to procure a miscarriage.

3. On and since August 10, 1939, having improperly endeavoured to conceal the suspicious circumstances surrounding her death.

He was closely questioned by the Board and gave such answers and explanations that the Board came to the conclusion that the charges could not be sustained.

Obituary.

WILLIAM BRODIE GRANT.

We regret to announce the death of Dr. William Brodie Grant, which occurred on March 8, 1940, at Haberfield, New South Wales.

Medical Appointments.

THE following appointments have been made to the honorary medical staff of the Royal North Shore Hospital of Sydney. Physicians: Dr. W. W. Ingram, Dr. C. W. Sinclair, Dr. A. E. Aspinall; Assistant Physicians: Dr. D. Anderson, Dr. B. T. Shallard, Dr. S. D. Allen; Psychiatrist: Dr. D. W. H. Arnott; Dermatologist: Dr. F. C. Florance; Assistant Dermatologist: Dr. W. K. Myers; Cardiologist: Dr. A. J. H. Stobo; Surgeons: Dr. E. D. Clark, Dr. V. M. Coppleson, Dr. H. H. Jamieson; Assistant Surgeons: Dr. B. W. B. Riley, Dr. L. S. Loewenthal, Dr. R. A. Money; Gynaecologists and Obstetricians: Dr. H. Leaver, Dr. O. Robertson, Dr. A. J. Murray; Assistant Gynaecologists and Obstetricians: Dr. S. B. Studdy, Dr. A. A. Moon, Dr. R. H. Macdonald; Ophthalmic Surgeon: Dr. W. M. C. MacDonald; Assistant Ophthalmic Surgeons: Dr. G. H. Appel, Dr. C. G. Berge; Ear, Nose and Throat Surgeon: Dr. E. P. Blashki; Assistant Ear, Nose and Throat Surgeon: Dr. A. L. Clowes; Orthopaedic Surgeon: Dr. A. R. Hamilton; Assistant Orthopaedic Surgeon: Dr. W. L. Macdonald; Urologist: Dr. R. J. Silvertown; Assistant Urologist: Dr. C. M. Edwards; Surgeon for Venereal Diseases: Dr. C. J. Wiley; Assistant Surgeon for Venereal Diseases: Dr. A. F. Janes; Radium Therapist: Dr. H. J. Ham; Radiologists: Dr. H. R. Sear, Dr. K. F. Vickery, Dr. B. P. Anderson Stuart, Dr. P. Tillett; Anaesthetists: Dr. J. F. McCulloch, Dr. W. G. Holt, Dr. C. N. Paton; Physician in Charge of Pulmonary Unit: Dr. W. C. B. Harvey; Assistant Physician to Pulmonary Unit: Dr. G. B. White; Thoracic Surgeon to Pulmonary Unit: Dr. M. P. Susman; Physician to Allergy Clinic: Dr. B. M. B. Riley; Assistant Physician to Allergy Clinic: Dr. T. A. G. Holmes; Physiotherapist: Dr. A. L. Ducker; Clinical Assistants: Dr. J. Z. Hule, Dr. C. Warburton, Dr. J. Christie (Medical); Dr. E. H. Goulston, Dr. C. H. Lawes, Dr. Kathleen C. Cunningham (Surgical); Dr. J. C. Loxton, Dr. Ella S. Windeyer, Dr. E. Collins (Gynaecological and Obstetrical); Dr. M. S. Schreiber (Orthopaedic); Dr. N. W. Francis (Venereal Diseases); Dr. C. G. Bayliss (Pulmonary); Dr. B. Williams (Allergy).

Dr. W. F. Matthews has been appointed a Member of the Board of Official Visitors to the Mental Hospital at Orange, New South Wales.

Dr. J. E. Overstead has been appointed Government Medical Officer at Cooktown and a Health Officer in accordance with the provisions of *The Health Acts, 1937 to 1939*, of Queensland.

Dr. P. A. Stevens has been appointed Government Medical Officer at Proserpine, Queensland.

Dr. R. W. Gibson has been appointed Officer of Health at and around Fowler's Bay, Penong and Cook, pursuant to the provisions of the *Health Act*, 1935, of South Australia.

Dr. J. Kingsley has been appointed a Medical Officer in the Medical Branch of the Department of Public Instruction of New South Wales.

Dr. R. J. Millard has been appointed a Member of the Nurses' Registration Board of New South Wales, pursuant to the provisions of the *Nurses' Registration Act*, 1924, of New South Wales.

Nominations and Elections.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

McDowall, Jean, M.B., B.S., 1938 (Univ. Sydney), "Baringa", Trentino Road, Turrumurra.

THE undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Bidstrup, Patricia Lesley, M.B., B.S., 1939 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

Fox, Ina Alice Owen, M.B., B.S., 1938 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

Dibden, William Andrew, M.B., B.S., 1939 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

Diary for the Month.

- MAR. 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 MAR. 20.—Western Australian Branch, B.M.A.: Branch.
 MAR. 26.—New South Wales Branch, B.M.A.: Council (Quarterly).
 MAR. 27.—Victorian Branch, B.M.A.: Council.
 MAR. 28.—New South Wales Branch, B.M.A.: Annual Meeting.
 MAR. 28.—South Australian Branch, B.M.A.: Branch.
 MAR. 29.—Queensland Branch, B.M.A.: Council.
 APR. 2.—New South Wales Branch, B.M.A.: Council.
 APR. 3.—Victorian Branch, B.M.A.: Branch.
 APR. 3.—Western Australian Branch, B.M.A.: Council.
 APR. 4.—South Australian Branch, B.M.A.: Council.
 APR. 5.—Queensland Branch, B.M.A.: Branch.
 APR. 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee; Organization and Science Committee.
 APR. 9.—Tasmanian Branch, B.M.A.: Branch.
 APR. 12.—Queensland Branch, B.M.A.: Council.
 APR. 16.—New South Wales Branch, B.M.A.: Ethics Committee.
 APR. 17.—Western Australian Branch, B.M.A.: Branch.
 APR. 18.—New South Wales Branch, B.M.A.: Clinical Meeting.
 APR. 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xvi-xix.

AYR HOSPITAL BOARD, AYR, QUEENSLAND: Resident Medical Officer.

DEPARTMENT OF INSPECTOR-GENERAL OF HOSPITALS, ADELAIDE, SOUTH AUSTRALIA: Resident Medical Officer.

SAINT VINCENT'S HOSPITAL, MELBOURNE, VICTORIA: Honorary Officers.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	Associated Medical Services Limited. All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Federated Mutual Medical Benefit Society. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL, or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	Wiluna Hospital. All Contract Practice Appointments in Western Australia.

Editorial Notices.

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